

1.0 Introduction

Fabric bags are increasingly being used for the delivery of bulk materials and other items to site. They are available in different types, sizes, and materials. This guidance is provided to promote safe lifting and handling of these bags with cranes, tele-handlers and other types of lifting equipment.

2.0 Flexible Intermediate Bulk Containers

Large capacity bags made from fabric - Flexible Intermediate Bulk Containers (FIBCs) - are frequently used for the delivery of aggregate materials such as sand and gravel. Though not their primary intended purpose, FIBCs are also used to deliver other items such as reinforcement links and engineering components.

FIBCs manufactured in accordance with BS EN ISO 21898:2005 *Packaging - Flexible intermediate bulk containers (FIBCs) for non-dangerous goods bags* are available in three types.

FIBC Type	Designed and Intended To Be Used For	Type Test Final Load
Single-trip	One filling only	5 x Safe Working Load (SWL)
Standard-duty Reusable	A limited number of fillings and discharges	6 x SWL
Heavy-duty Reusable	Multiple fillings and discharges	8 x SWL

FIBCs manufactured to BS EN ISO 21898 should have undergone type testing that includes multiple cyclic top lift tests, a final fill test to destruction and a compression/stacking test. These tests are undertaken with aggregate material. If the bags are used to lift other types of material, the SWL may have to be reduced.

Single-trip FIBCs should not be reused and should be scrapped after they have been emptied. Standard and Heavy Duty FIBCs may be refilled but only after being inspected for damage prior to use.

BS EN ISO 21898 requires FIBCs to be durably marked with a permanently attached and easily readable label, or durably printed on the body so that it is easily visible and easy to read after the FIBC has been filled.

The label should include the following information:

- Name and address of the manufacturer;
- Manufacturer's reference;
- Name and address of the supplier, if required;
- Safe working load (SWL) in kilograms;
- Safety factor, i.e. 5:1, 6:1 or 8:1 as appropriate;
- Reference to BS EN ISO 21898:2005;
- Class of FIBC, i.e. '**heavy-duty reusable**', '**standard-duty reusable**' or '**single-trip**';

- Type test certificate number (which shall be unique to any one type) and the month and year in which the type test certificate was issued;
- Name of the approved test laboratory;
- Date of manufacture of the FIBC, i.e. month and year;
- Pictograms of the recommended handling methods;
- Details of any special treatments;

NOTE: Treatments may include UV Protection, electrostatic, or flame retardant

- Where the FIBC is certified in relation to a specific product, the description of that product.

3.0 Custom Heavy Duty Lifting Bags

Custom Heavy Duty Lifting bags are available for lifting specific items such as solar panels, tools, engineering components, mechanical fixings and scaffolding equipment - **see Figures 1a and 1b.**

These are designed to be used on multiple occasions and made from heavy duty materials and incorporate integrated textile slings. They can include specialist linings, base trays, rigid panels and different closure flaps to suit the materials being transported and lifted.

The slings incorporated with the bags should meet the requirements of BS EN 1492-1:2000+A1:2008 Textile slings - Safety.

The bags should be marked with:

- Name and address of the manufacturer;
- Manufacturer's reference - which shall be unique to any one bag type;
- Name and address of the supplier, if required;
- Safe working load (SWL) in kilograms;
- Safety factor;
- Reference to relevant standards;
- Date of manufacture;
- Pictograms of the recommended handling methods;
- The description of the product(s) that may be lifted within the bag.



Solar panel bag



Round open top bag



Scaffold component bag

Figure 1a: Examples of custom heavy duty lifting bags



V-flap lifting bag

Roll Top Lifting Bag

Tub Lifting Bag

Figure 1b: Examples of custom heavy duty lifting bags

4.0 Lifting loads using fabric bags

Fabric lifting bags should be provided with instructions by the manufacturer or supplier as to how they should be filled, lifted, stored and emptied safely.

The following precautions should always be taken to ensure that fabric bags and the material they contain are lifted safely:

1. Fabric bags should only be lifted in line with instructions issued by the manufacture or supplier. At no time should fabric bags be lifted over persons;
2. Single-trip FIBCs should be treated as single use (lifting off a vehicle after delivery), after which they should be destroyed / disposed of as their integrity cannot be further guaranteed. It should be assumed that all Single-trip FIBCs, irrespective of content type, are damaged and could fail at any point. After arrival at site, Single-trip FIBCs should not be lifted other than to place them on a pallet or into stillage, or to transfer the contents a certified lifting skip;
3. If FIBCs are used (all types) to deliver non-bulk items such as rebar links to site, an exclusion zone should be established around the delivery vehicle to be unloaded. It should be assumed that the bags are damaged and could fail at any point. The bags should then be lifted directly from the delivery vehicle and placed in stillages on the ground before any further site movement takes place;
4. On delivery to site, all bags should be inspected, prior to lifting, to ensure that they have not been damaged during transit to site. The inspection should be to the same standard as a that for a lifting accessory such as a fabric sling. The inspection should confirm that:
 - The bags have been correctly filled and the contents have not shifted during transport;
 - There are no abrasions, cuts, nicks or tears in the fabric, loops or stitching.

Note: Bags that have been stored outside for extended periods may have deteriorated due to Ultra Violet (UV) in sunlight. UV degradation may be indicated by a softening of the materials (sometimes discolouration) such that the outer surface may be rubbed off. In extreme cases, the outer surfaces may become powdery

- The bags are labelled/marked, **See Section 2 and Section 3.**

Note: Bags that have been exposed to rain during transport or storage may be heavier than indicated

- The bags can be safely lifted with the lifting equipment and accessories available at site;
- The bags are suitable for their intended use at site. If bulk material is to be discharged from the bottom of the bag, they should be fitted with a bottom discharge mechanism (spout);
- The bags have not been contaminated with oils, greases or chemicals during transport.

Note: If materials are delivered to site in an unsuitable manner, contact should be made with the supplier to prevent future deliveries being made in a similar manner

5. The handling instructions on the bag should always be followed. If the bags are to be stored on site, they should be single stacked;
6. Bags should always be lifted rather than dragged;
7. Bags should always be lifted using all the lifting loops provided. Spreader frames and lifting chains should be fitted with safety latches to prevent disengagement from the lifting loops. Multiple loops should not be brought together onto one hook, shackle or with a single sling;
8. If more than one bag is to be lifted at once, a spreader frame that is suitable for multiple bags should be used;
9. All parts of lifting devices (forklift tines, hooks, slings and other accessories) that are in contact with the bag's lifting points/loops must have rounded smooth edges, with a radius greater than 5mm to avoid damaging the fabric;
10. If fabric bags are to be transported by a forklift truck or tele-handler, they should be kept close to the ground during transit. The width across the fork tines should be adjusted to suit the spacing of the lifting loops. The fork tines should pass through all the lifting loops. Fabric bags should not be lifted with lifting slings attached to the fork tines;
11. When discharging bulk materials from FIBCs, the following points should always be observed:
 - FIBCs with a plain/solid bottom should not be emptied by cutting the base of the bag. FIBCs with bottom discharge mechanism (spouts) should be used instead;
 - The discharge should be done slowly with great care to avoid any shock loading to the crane;
 - Persons must never stand under an FIBC during discharge and must keep hands well clear to avoid being struck by the bag contents;
 - Persons must never stand or place their arm beneath a suspended FIBC.

5.0 Further Guidance and References

Flexible Bulk Intermediate Container Association - FIBC Safe Handling Guidelines	https://fibca.com/portfolio-items/fibc-handling-guidelines/
BS EN ISO 21898:2005 Packaging. Flexible intermediate bulk containers (FIBCs) for non-dangerous goods	
BS EN 1492-1:2000+A1:2008 Textile slings - Safety.	

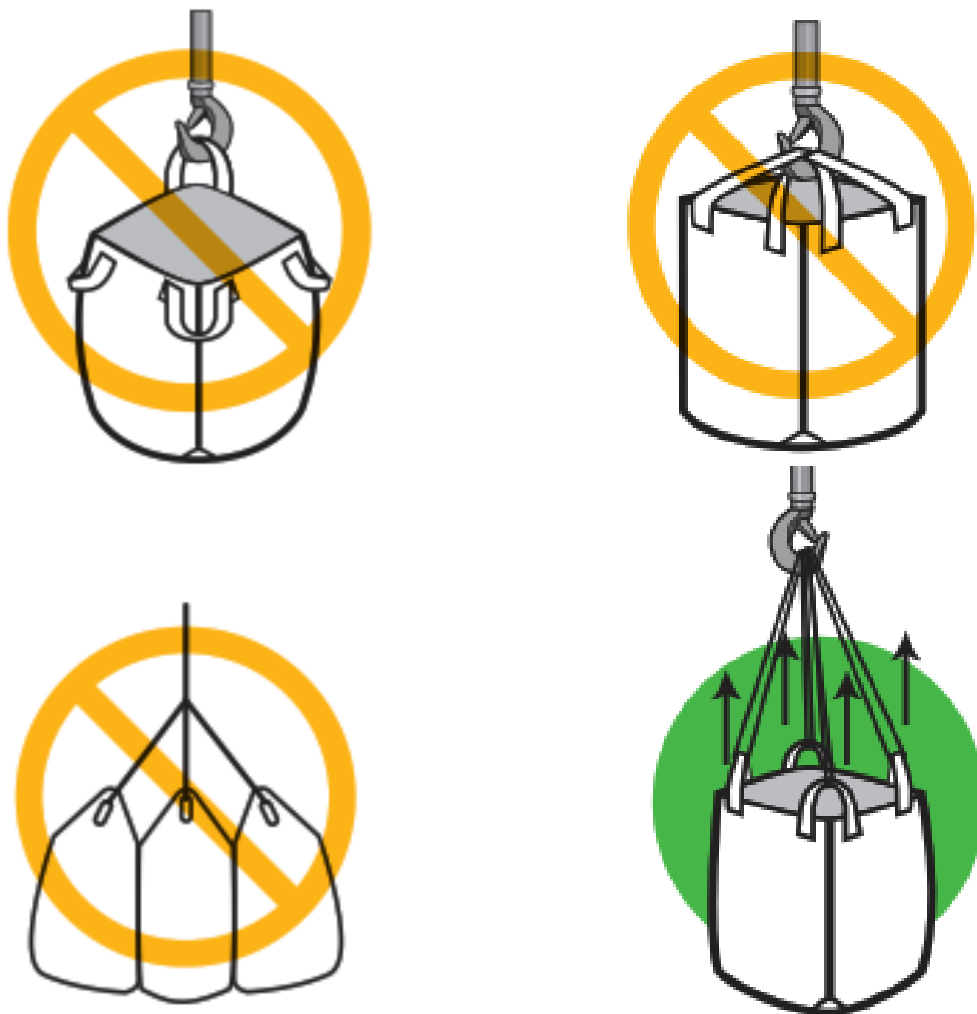


Figure 2: Examples of poor and good slinging



Figure 3: Example of a spreader frame