

FLEXIBLE INTERMEDIATE BULK CONTAINER – BIG BAG

APPLICATION OBJECTIVE

- Facilitating the collection of larger single amounts of dry solid, bulky or very small-sized waste (especially in places with limited space availability)

OUTLINE ON APPLICATION FRAMEWORK

PARTICULARLY APPLICABLE FOR WASTE TYPES

Glass	X	Light-weight packaging	X	Biowaste	X ¹
Paper / paperboard	X	Mixed household waste	X ²	Bulky waste	
Lamps		Textiles	X	Electrical and electronic waste	
Scrap metal		Waste wood	X	C&D waste	X
Waste oil		Old paint & lacquer		Waste tyres	
Hazardous waste	X ³	e.g. waste containing asbestos, that has to be collected and transported in consideration of security rules as emerging dust may risk the environment and persons,			
Branch specific waste	X				
Other waste material	X	Basically, Big Bags can be used for every kind of solid and dry waste, if security rules are met.			

SPECIAL CHARACTERISTICS AND REQUIREMENTS OF THE APPLICATION

Pre-treatment of the input material:

Not necessary, except of size reduction for oversized items to fit bag dimension

Options for the utilisation of the generated output:

Unlimited, no dependencies from type of receptacle used

Protective needs:

There could be health dangers during the filling and transportation process caused by developing dusts, by the uncontrolled discharge of sharp pieces and/or uncontrolled discharge of the content through tears in these receptacles. Persons involved in collection/pickup operations have to keep distance and wear helmets when the receptacles are lifted by crane.

Limitations in use:

Special versions of this receptacle are needed to capture liquid and sharp wastes

RESTRICTIONS OR INFLUENCE OF EXTERNALITIES ON THE APPLICATION

Infrastructural conditions:

Big Bags are easily to position, but transportation after filling can be done with technical help only. The technical means used can be forklift or crane, thus sufficient space is required for them.

Climatic conditions:

No limitations but possibility to freeze on the ground in areas with cold temperatures

¹ Separate collection of green waste, gardening waste, park waste and leaves using Big Bags

² only if a very low moisture content is provided

³ only usable as collection device for hazardous waste types, if the collection and transportation is not causing any risk to the environment and humans and if security rules are met

TECHNICAL DETAILS	
GENERAL OVERVIEW	
ABSTRACT	Big Bags are receptacles made out of reinforced fabric for the collection and temporary storage of small dimensioned solid waste materials that arise at specific places in quantities larger than mobile waste container can carry but well below the capacity of large sized containers such as roll-off or skip container. They are also a good alternative for the collection of certain waste material in areas with limited available space, i.e. places where large sized containers such as roll-off or skip container cannot be used.
BASIC REQUIREMENTS	- loading tor moving filled bigbags normally requires additional hoisting technology (in form of a crane or forklift)
SPECIFIC ADVANTAGES	- little capital intensive - little space demanding when stored or used - can easily be kept in reserve and used for strongly varying waste amounts - no specialized waste collection trucks are required
SPECIFIC DISADVANTAGES	- except of dry and small-sized materials, less suitable for other wastes - difficult to empty after compaction
APPLICATION DETAILS	
TECHNICAL SCHEME	<p>Big Bags are especially suitable for waste materials of mineral type such as C&D waste. A basal area of 900 x 900 mm is most common for big bags. Aside from that they differ especially in height, which leads to different carrying capacities (300 kg–1,500 kg). They are sold as one-way version or for multiple use. The image below shows a big bag that is filled with waste containing asbestos. The big bag is equipped with an inscription that warns of health risks coming from dusts and refers to security rules. The print of the notice in different languages permits the international use of the receptacle.</p> <p>Figure 1: Big Bag with waste containing asbestos (left) and warning notice about health risks and security regulations on Big Bag (right) (Picture source: Harald Heinritz, www.abfallbild.de)</p>  <p>The left image shows a large white woven polypropylene bag (big bag) filled with waste, standing outdoors. A red warning label is visible on the side. The right image is a close-up of the red warning label, which contains text in three languages: German, French, and English. The German text reads 'ACHTUNG ENTHÄLT ASBEST' and 'Gesundheitsgefährdung bei Einatmen von Asbestfeinstaub Sicherheitsvorschriften beachten'. The French text reads 'ATTENTION CONTIENT AMIANTE' and 'Respirer la poussière d'amiante est dangereux pour la santé Suivre les consignes de sécurité'. The English text reads 'Attention Contains Asbestos' and 'Inhaling asbestos dust is dangerous to health Follow safety instructions'.</p> <p>Big Bags may have the following features:</p> <ul style="list-style-type: none"> - with in-/outlet, - with and without inner sealing - material designed for various grain size - different dimension to fit materials of varying size and quantities.
QUANTITY ASPECTS	Big Bags are preferably used for waste quantities consisting of small pieces and with volumes lying between sack and skip container (range of weight 300–1,500 kg).

SCALE OF APPLICATION	Big Bags are normally not used as a permanent collection solution but for waste generated in medium amounts on short term at places with space limitations. They are special suited for bulky or granular types of waste.
INTEROPERABILITY	Big Bags can be used for the non-systematic collection or as a complement to any other collection arrangement, e.g. on building sites. Big Bags are often used to deliver industrial raw material. The emptied big bag is then used to collect waste.
OPERATIONAL BENCHMARKS: RESOURCE CONSUMPTION	
HUMAN RESOURCES NEEDED	Unloading and re-loading on a pick up vehicle can be done by 1 person, usually the truck driver, with the help of hoisting equipment. He also empties the big bag at the disposal facility or facility staff is doing it.
AIDS AND ADDITIVES NEEDED	Hoisting equipment is needed to move filled big bags. Usually a platform truck with an on board crane is used for the pick-up.
SPATIAL NEEDS	The space demands are low. Bigbags should be set up at their final place because moving them in a filled state is difficult and requires additional equipment.
OPERATIONAL BENCHMARKS: COST DIMENSIONS	
INVESTMENT COSTS	The capital demands for Big Bags are comparatively low. A Big Bag costs between EUR 4.50 and EUR 13 depending on the quality and number of pieces ordered. Racks for big bags are also available.
OPERATING COSTS	To allow for reuse arrangements for big bags, 30% of the initial investment may have to be spent per each tour (for example for additional lining)
MISCELLANEOUS	
MARKET INFORMATION	
REFERENCE FACILITIES	The collection of dry solid waste, above all C&D waste, with big bags is a common practice worldwide. Most waste service providers in Germany do use big bags in their operations or offer services where these type receptacles are being used.
RECOGNIZED PRODUCER AND PROVIDER FIRMS <i>(important note: the list of firms does not constitute a complete compilation of companies active in the specified fields)</i>	<p>Production and retail of bigbags is a domain of several companies in Germany, most of them are small and medium-sized enterprises. In Germany, such are for example:</p> <ul style="list-style-type: none"> - Buhck Umweltservices GmbH & Co. KG www.buhck.de - HIRSCH Bremer Reinigung und Recycling GmbH www.hirsch-gmbh.com - akcensis GmbH, Wesel www.ixkes.de/big-bag - ams Umweltschutz GmbH, Berlin www.amsberlin.de
REMARKS AND REFERENCE DOCUMENTS	
<p>Reference for applicable norms/standards:</p> <ul style="list-style-type: none"> - DIN 55461-2:1991-07: Large size packages; flexible IBC; dimensions 	