Chapter 5 Bags
Section 5.0 General information

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5.0.1 Introduction

Bags as packing for products of the chemical industry are introduced in various forms. Their construction depend on the most diverse criteria. In addition belongs others things:

- Product properties
- Filling techniques
- Storage loads
- Transportation loads
- Residual emptying
- Optimization of units loads

- **Standardisation**

In order to obtain shorter lead times as well as benefit from lower procurement costs it is recommended to consider the criteria specified in this section by using standardized materials and dimensions

- **Environmental issues**

The use of packages requires to observe the legal interests (packaging ordinance, transportation of dangerous goods, etc.).

Optimized cargo units and freight traffic often allow the reduction of the material used (film thickness, number of layers) and contribute thus to waste avoidance.

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5.0.2 Application

Many of our solids products are packed in bags.
There are different kinds of bags available on the market with different construction materials and shapes.
The selection of the bag to be used is depending on the properties of the product and the applications.
Because of ergonomic reasons bags should not be heavier than maximum 25 kg.

Materials:

- **Paper**

Paper bags most of the time exists of 3 or 4 layers of paper with or without a thin plastic liner to improve moisture resistance. Paper bags are most used for fine powders. Paper bags are the main packaging in e.g. Cement- and Building Industry.

- **Plastic**

In plastic the two main types of bags on the market are the film bag and the woven bag.
Plastic bags can be made in any strength required.

- **Plastic film bag**

Plastic film bags are the main packaging for 25kg in the Plastics Industry.

- **Woven plastic bag**

Woven plastic bags are used in applications where exceptional tear strength is needed. An example from the past is exports where bags where manually unloaded from the container using a hook.
Woven bags cannot be used for dusty products.
Woven materials are used commonly to pack granulates and powders. Bags for powders need either a coating or a film inner liner.

- **Composite-layer film bags**

Composite-layer film bags are bags produced from films with multiple thicknesses.
The particular film thicknesses configuration is specified for the purpose of use.

Shapes:

- **Open mouth bag**

An open mouth bag is a bag from which the top is completely open. After filling of the bag, the bag is closed by stitching or heat-sealing for plastic, or by gluing or stitching for paper.

- **Valve bag**

The valve bag is a pre-formed bag with a valve through which the bag can be filled. Valve bags use more material and more weight.

- **Form Fill & Seal (FF&S) bag**

The FF&S bag is made locally at the filling machine. An endless tube of film is unwound in the bagging machine. The film is cut at the required bag length and a bottom seal is made.

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5.0.3 Selective criteria

Materials

Bag materials are paper, plastic and composite film.

Design

Bags are used in most different forms and variants.

- valve bottom bags
- flat bags
- blockbottom bags
- gusset bags
- gusset bags from folded tube ex Form-Fill-Seal equipment
- bags from flat foil ex Form-Fill-Seal equipment
- a.o.

In attached specifications only some are specified.

Aspects of the product and the required machinery

The selection of a suitable bag depends on

- the filling material
- the available filling equipment
- the emptying facilities of the customers
- the quantities of the specific bag
- the quantity of the product to be filled up
- the way of palletizing

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5.0.4 Quality requirements

Please consult chapter 9 for further information.

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5.0.5 Recovery systems

Depending on the bag material used different ways of reutilization are offered by the following organizations:

REPASACK	Gesellschaft zur Rücknahme gebrauchter Papiersäcke GmbH
RIGK	Gesellschaft zur Rückführung industrieller und gewerblicher Kunststoffverpackungen mbH

For further information please refer to chapter 10 (reutilization systems).

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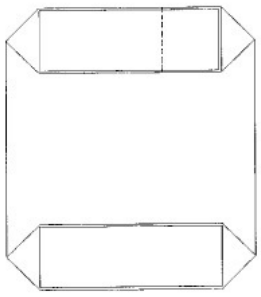
Section 5.1 Plastic film bags

5.1.1 Valve bottom bags

Dimensions in mm:



Bag width: (measured flat)	..., 500; 510; 520, ... as required
Bag length: (measured flat)	(gradation of 10 mm) as required
Bottom width: (measured flat)	..., 140; 160; 180, ... as required

Film thickness in mm:

Bag film thickness:	..., 0.16; 0.18; 0.20, as required (gradation of 0.02)
Bottom cover thickness:	0.20 or 0.25
Venting film thickness:	0.08; 0.10; 0.12 or 0.15

Material:

PE-LD
depending on the application also as
- blended
- UV-stabilized
- coex-film
- aluminium composite (Al- thickness:0.07 or 0.09 mm)

Technical requirements:

Residual emptying:	according to VPA 4
Identification/markings:	material according to Verpack-V §14
Delivery:	protected on CP pallet
Venting design:	depends on product- and filling equipment parameters

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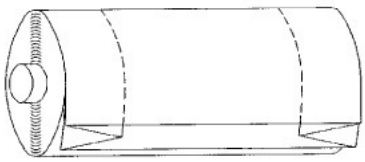
Section 5.1 Plastic film bags

5.1.2 Gusset bag from folded tube foil

Dimensions in mm:

Side folded tube on coil for form-fill-sealing:



Bag width: (measured flat)	..., 500; 510; 520, ... as required
Bag length: (measured flat)	(gradation of 10 mm) as required

Foil thickness in mm:

Bag film thickness:	..., 0.16; 0.18; 0.20 as required (gradation of 0.02)
Fold dimension:	as required max. 80 mm

Material: PE-LD
depending on the application also as
- blended
- UV-stabilized
- coex-film
- aluminium composite (Al-thickness: 0.07 or 0.09 mm)

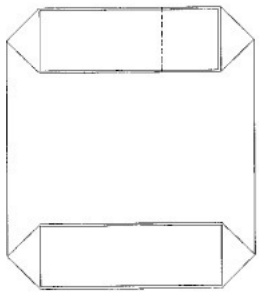
Technical requirements:

Residual emptying:	according to VPA 4
Identification/markings:	material according to Verpack-V §14
Delivery:	UV- protected on CP-pallet
Edge sealing:	e.g. for better residual emptying, ventilation, (labyrinth- ventilation)

Chapter 5 Bags
Section 5.2 Paper bags

5.2.1 Valve bottom bag

Dimensions in mm:



Bag width: (measured flat)	...; 500; 510; 520; ... as required
Bag length: (measured flat)	(gradation of 10 mm)
Material:	- "Kraftsack" paper stretch capability normal or high - light crepe paper
Material weight:	70 g/m^2, 80 g/m^2 or 90 g/m^2

Technical requirements:

Wet strength:	15 % max. (loss of strength)
Residual emptying:	according to VPA 4
Design:	2 layers, if necessary more

Optional Equipment :

Inner bag:	PE-LD 0.05 mm PE-HD 0.03 mm
Middle layer:	PE-LD 0.05 mm PE-HD 0.02 mm
Aluminium composite:	aluminium 0.07 or 0.09 mm
Delivery:	protected on CP-pallet
Identification/markings:	material according to Verpack-V §14