

A.B.S.

Silos and
conveying
systems

... with more than 25 years of experience
and over 45,000 flexible silos sold



Silos
Containers



Discharge aids
Plant construction

... flexible solutions for bulk goods

www.aps-silos.de

⟨ ... Bulk goods list ⟩

Here you will find a list of bulk and piece goods. Your product is not on the list? No problem, because flexibility is our strength! We are pleased to become acquainted with your requirements.

Acryl resins	Cinnamon sugar	Fly ash	Mica fluffs	Potato starch	Sugar beet strips
Active carbon	Citric acid	Fly dust	Milk powder (fat)	Poultry food	Talcum
Aerosil	Clay loam (dry)	Fodder	Milk powder (lean)	Powder coating	Tea
Aluminium powder	Clay loam (moist)	Foil strips	Mixed herbs	Pumice (powder)	Textile fibres
Animal feed	Coffee beans	Fuller's earth	Nuts	PVC bottom covering strips	Titanium dioxide (white)
Appel pectin	Coffee extract powder	Fungicides	Nylon (fibres)	PVC-Powder	Tobacco leaves
Aroma substances	Coffee powder	Garlic powder	Nylon (flocks)	Raisins	Tobacco powder
Asbestos fibers	Colour pigments	Gelatin	Oat creme powder	Resin (powder)	Urea
Asbestos powder	Cork (broken)	Glass fibres	Oat flakes	Rice	Vinyl resins (powder)
Ascorbic acid	Cork (honed ground)	Glass pearls	Oat meal	Saccharose (crystalline)	Vitamins
Ash	Cotton seeds	Glue (ground)	Oat Onions (hoed)	Salt	Washing powder
Baking powder	Dental cast	Glue granulate	Onions (powder)	Sawdust	Wheat flour
Bauxite	Dextrose	Glue powder	Packaging chips	SBS	Wood- and plane shavings
Biscuite mixtures	Diatomite	Graphite powder	Peanuts	Silica gel	Wood flour
Blow flour	Dicalciumphosphate	Grass seeds	Pepper corns	Silica sand	Wood pellets
Bones (ground)	Dog food	Guar flour	Perlite (expanded)	Silicon carbonate	Zinc oxide...
Bran	Drops	Gum (granulate)	Perlite (rock)	Slag wool	
Brimstone	Egg powder	Gum strips	Phenol resin (powder)	Smut (pigment)	
Carbon (powder)	EPP	Injection moulded components	Pills raw mixture	Smut	
Cellular material (flocks)	EPS	Kaolin (dry)	Plastic granulate	Soap flocks	This list grows daily!
Cellular rubber (strips)	Fango	Limestone meal	Plastic grist	Soap powder	
Cellulose acetate	Ferric oxide	Maize chips	Plastic reclaims	Soda	
Cement	Fertiliser (granulate)	Maize flour	Polyester resin (flocks)	Starch (granulate)	
Cereals	Fertiliser (powder)	Maize starch	Polyester strips	Starch (powder)	
Chalk (pulverised)	Fish food	Malt (dry)	Polyethylene (powder)	Straw chaff	
Char (powder)	Fish meal	Malt flour	Polystyrene (granulate)	Sugar (crystal)	
Chicory powder	Flour	Meat meal	Polystyrene (powder)	Sugar (powder)	
Chocolate powder	Flush socket		Polystyrene balls		



⟨ ... Areas of application ⟩

Flexible A.B.S.-Silos and containers made of very strong and durable high-tech polyester fabric are suitable for a broad range of the most varied of applications. They are available for weights up to 50 t and volumes up to 200 m³.

A.B.S. Flex-Bins (silo, container) are in demand everywhere today where bulk goods need to be stored quickly, efficiently and safely as in the plastic- and recycling industry, in the chemical and pharmaceutical in-

dustry as well as in the sectors of food, animal feed and confectionary industry.

The bulk goods in storage are equally varied: from trouble-free peas and polystyrene balls through to interlocking materials such as baking flour or colour pigments and even clumping materials such as tealeaves and fibreglass or shredder wool.

With A.B.S. Flex-Bins (silo, container) are tailor-made solutions possible.

Bulk goods classes	Discharge characteristics	Example	Discharge aid
1	Flows without restriction	Peas, Polystyrene, Plastic granulate,...	None
2	Flows with restriction	Rough cereal shred, Plastic grist,...	Silo and outlet cone made of flexible fabric
3	Sometimes forms bridges	Cereals, Oatmeal, Grass seeds	A.B.S.-Fliess-Ex [®] or A.B.S.-Walk-Ex [®]
4	Do not flow out, injected air allows the bulk goods to flow	Flour, Cocoa, Colour pigments, Talcum, Kaolin,...	A.B.S.-Fluid-Ex [®] or A.B.S.-Pneum-Ex [®]
5	Do not flow out, the bulk goods cannot be made to flow out	Gum meal, Cork broken,...	A.B.S.-Walk-Ex [®] or A.B.S.-Fliess-Ex [®] or A.B.S.-Pneum-Ex [®]
6	Bulk goods stick or clump	Gum granulate, Glue granulate,...	A.B.S.-Pneum-Ex [®] ₁
7	When under pressure, the bulk goods lock	Mica lamella, Tealeaves,...	A.B.S.-Pneum-Ex [®] ₂
8	Bulk goods felt strongly	Pomace, Plant material dried	A.B.S.-Pneum-Ex [®] ₃
9	Bulk goods form wide-spanned bridges (e.g. up to 3 m)	Foil- and Paper strips, Shredder wool	A.B.S.-Pneum-Ex [®] ₄
10	Forms bridges even in vertical walls	Stone wool, Fibreglass crushed	A.B.S.-Pneum-Ex [®] ₅

1-5) with the application of Pneum-Ex[®] the number of required air hoses, depending upon the properties of the bulk good and size of the silo.

... your advantages

- Maximal space utilisation, i.e. large storage capacity with a low space requirement
- Low own weight, which means that no complex foundations are required
- Robust and durable construction
- Thanks to their flexible walls A.B.S. Flex-Bins (silo, container) have very good flow-out characteristics
- Free choice of shut-off and emptying devices
- Safe system function with low operating and maintenance input
- Very easy to clean and ... very flexible and all-round applicable



Sharpener-cage



Plastic agglomerate



Plastic granulate



Up-foam Polystyrene



Powder



Oat flakes



Expanded Maize



〈... Flex-Silos 〉

Tailor-Made Solutions

Flex-Silos are manufactured like a bespoke suit - shape, size and fabric can be adapted to suit your special requirement in a way that no other silo system can match.

This begins with the optimised use of space, because with their square or rectangular base dimensions, Flex-Silos use the available space better than cylindrical shapes. It is also possible to achieve precise adaptation to the space height. Flex-Silos are also particularly attractive when it comes to retro-installation, because in dismantled condition they fit through standard doorways.

When it comes to the choice of fabric, we also have options some of which are simply not achievable with solid silos made of steel or aluminium. This means that the formation of condensate is prevented through the use of breathable fabric. In addition there are also air-tight versions as well as numerous versions of coated and uncoated fabric. Fabrics are available with authorisation for the food sector as are electrically conducting versions for the safe discharge of electrostatic charges.

A further plus point of our Flex-Silos is the multitude of possible variations in the outlet area, the construction and equipment of which can be precisely adapted to suit the special requirements of the stored products. Important parameters in this regard include outlet diameter, cone angle and discharge aids.

With appropriate zone division, these A.B.S. Flex-Silos or system components are manufactured in accordance with the regulations of the ATEX-guideline



Flex-Silos for granulated cork.
Volume per silo approx. 100 m³.
In use with a supplier to the automotive industry

A.B.S. Flex-Silos

- Maximal space utilisation, i.e. large storage capacity with a low space requirement
- Low own weight, which means that no complex foundations are required
- High rigidity values and load capacities: Seven-fold safety for seams and fabric
- The fabrics used are selected exactly in accordance with the requirements of your bulk goods: In this way, e.g. coated and uncoated fabrics as well as versions approved for food or electrically conducting versions are available
- Perfect flow-out characteristics
- A multitude of possible variations in the discharge area
- Can also be assembled in very inaccessible locations
- Can be quickly dismantled and erected, allowing relocations at any time
- Can also be fitted with effective discharge equipment

ADVANTAGES

〈... Flex-Containers 〉

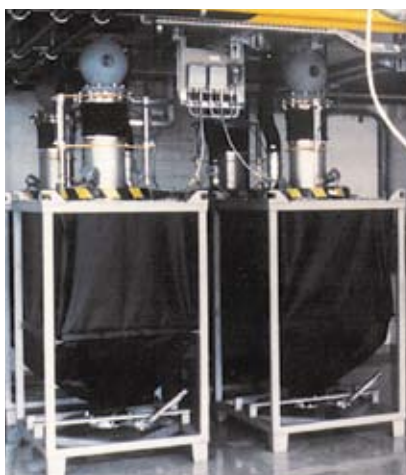
Flexible solutions for transport and temporary storage

Flex-Containers allow optimal solutions for both internal and external logistics tasks relating to bulk goods. They are equally suitable for transport and temporary storage. Flex-Containers are available as standard with volumes ranging from 0.5 to 2 m³.

Like here "big brothers" they essentially consist of a steel frame, a flexible container sack and a shut-off device. They are manufactured individually to suit customer specifications. In this way the inflow and removal area can be adapted to suit the requirements in question.

Flex-Containers are available in a multitude of different dimensions, and in terms of their material composition, choice of shut-off device and discharge aid they are precisely adapted to the respective requirement.

With appropriate zone division, these containers or system components are manufactured in accordance with the regulations of the ATEX-guideline.



A.B.S. Flex-Container

- Can be used either as mobile or stationary units depending on area of application and task
- Their stackability means that existing space height can be maximal utilised
- The fabrics used are selected exactly in accordance with the requirements of your bulk goods: In this way, e.g. coated and uncoated fabrics as well as versions approved for food or electrically conducting versions are available
- Free choice of shut-off and emptying devices
- Containers can additionally be equipped with effective A.B.S.-Discharge aids
- Standard construction with stackable corners and feet as well as end-stop and transport aids for crane- and truck-operation

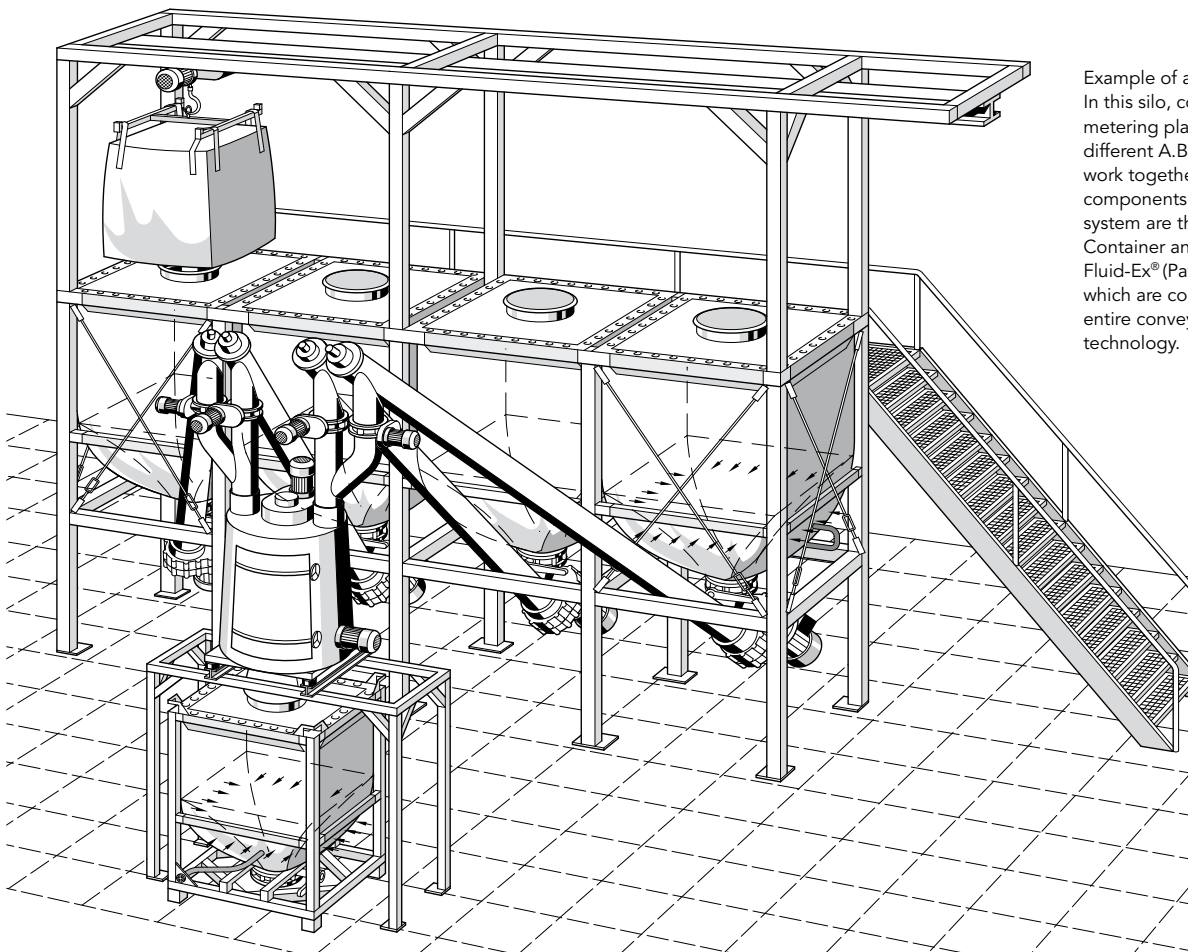


⟨... Turn-key plant construction ⟩

Overall solutions with a system

Irrespective of whether you are thinking about a new plant, wish to comprehensively expand or convert existing facilities - you should definitely take your ideas along to A.B.S. as soon as possible. Our experts in the flexible plants systems know very well what is important and which mistakes should be avoided.

If required we can supply turn-key overall solutions – from engineering to assemble – including SPS control, filling level, weighing, conveying and dosing technology, as well as the connection to the followed processes. You will receive not only a solution to your storage problems, but also solidly-based, mutually matched plant-system engineering.



Example of a complete solution: In this silo, conveyor and metering plant for rock flour different A.B.S.-Components work together. The essential components of the overall system are the Flex-Silo, Flex-Container and the discharge aid Fluid-Ex® (Patent-Nr. 37 22 332), which are completed by the entire conveyor- and metering technology.

〈... Discharge aids〉

Highly effective and tested discharge aids for safe discharge

Discharge problems cause high costs through plant hold-up or incorrect mixtures. Our specialists have decades of experience in the prevention or removal of discharge problems in storage bins (silo, container). Safe discharge is guaranteed by the fitting or retro-fitting of highly effective A.B.S.-Discharge aids, the characteristics of which are precisely adapted to the stored goods.



Fliess-Ex®

Intelligent material combinations reduce the friction coefficient of the silo wall as well as in the cone area, thereby ensuring the greatest possible degree of smoothness on the outer walls.

Fluid-Ex® (Patent-No.: 37 22 332)

Fluid-Ex® consists of a highly flexible textile combination. With the help of Fluid-Ex® the air that escapes during storage is injected and so the bulk good become a well flowing material. Fluid-Ex® works with minimum air requirement and very small energy input.

Walk-Ex®

By periodic injecting and extraction of air into the air-holding cone varies in his geometry. So bulk goods bridges are broken down and thereby allowing the bulk goods to flow out freely.

Pneum-Ex®

Multiple air bags arranged in the cone change this constantly in its form and in the discharge angle, so that bridge formations can be inhibited.



Bulk goods regain flow characteristics by means of the targeted introduction of Fluid-Ex®-system (Cross-section: Fluid-Ex®-system)

Function of discharge aids



In the lower part of the silo, Fliess-Ex® ensures that the outlet walls are having the highest degree of smoothness



Fluid-Ex® (Patent-Nr.: 37 22 332) is used to re-introduce air targeted into the bulk goods, thus allowing them to flow



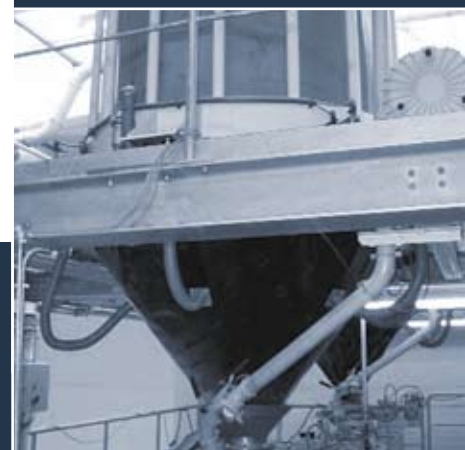
Walk-Ex® breaks down bridges in the bulk goods



In Pneum-Ex® large air hoses constantly change the form and outlet angle of the silo cone

A.B.S.-Discharge aids:

- Guarantee safe discharge of the bulk good
- Can be adapted to suit the shape of the existing bin (silo, container)
- Kind to the stored goods (no grinding, no breaking)
- No inserted components extending into the silo, therefore easy to clean
- low-maintenance
- Minimum power consumption
- Retro-fitting possible in existing metal, wooden or concrete containers





⟨ ... **A.B.S. GmbH – and their satisfied customers** ⟩

Nothing speaks more convincingly in favour of the quality and reliability of our products than a look at our list of customers. For more than two decades we have been supplying and providing customer care to companies from the most varied of industrial sectors. In

doing so, we develop solutions for very special problems, and prove ourselves as a reliable contact partner in all questions of system construction.

⟨ ... **a strong team with over 25 years of experience** ⟩

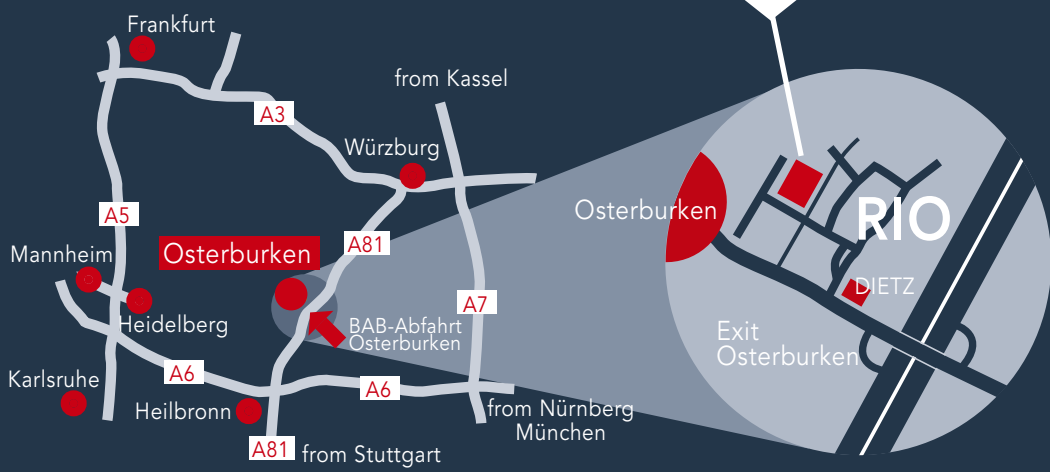
More than 45,000 installed A.B.S. Flex-Bins (silo, container) throughout the world give you the safety of having found the competent partner for your project. The experts in our team knows exactly what is important!

Our team is happy to advice you with regard to planning your silo system and give you some tips and make suggestion on how you integrate A.B.S. Flex-Bins (silo, container) into your workflow while making maximum use of the available space. This can save you time and a lot of money.



Our team is looking forward to your enquiry!

⟨ ... **This is how you can find us** ⟩



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