Raw Material Bin

Product Overview

Raw material silos are vertical storage vessels used to store bulk granular or powdered industrial raw materials. They are widely used in industries such as cement production, ready-mix concrete plants, dry-mix mortar plants, building materials processing, chemical production, grain storage and transportation, and coal and energy.

Based on structural design, raw material silos are primarily classified as follows:

Cylindrical steel silos (silos): A large-scale industrial standard solution featuring high capacity and a sturdy structure

Conical-bottom cement silos: An economical and practical option, suitable for use with concrete mixing plants

Panel-assembled cement silos: Modular design, suitable for export and projects with transportation constraints

Flat-bottom raw material silos: Suitable for mixed storage of multiple materials and integration with large-scale unloading lines

Our raw material silo products are based on standardized designs and centered on customized services. We provide optimal storage solutions tailored to customers' material characteristics, production capacity requirements, site conditions, and budget constraints.





Technical Specifications

Bulk Cement Silos (Standard Type)

Parameter Items	Technical Specifications
Capacity Range	30t / 50t / 80t / 100t / 150t / 200t / 300t / 500t / 1000t / 2000t
Main Material	Q235B / Q345B carbon structural steel (optional: 304/316L stainless steel)
Tank Wall Thickness	4 mm / 5 mm / 6 mm / 8 mm (calculated based on capacity and wind pressure)
Tank Diameter	ϕ2.4 m / ϕ3.0 m / ϕ3.6 m / ϕ4.5 m / ϕ6.0 m / ϕ8.0 m / ϕ10.0 m / ϕ12.0 m / ϕ15.0 m / ϕ18.0 m / ϕ23.0 m
Tank Height	Customized based on capacity and on-site height (standard models: 8 m–25 m)
Corrosion Protection	Hot-dip galvanizing (zinc coating ≥ 275 g/m²), epoxy resin spraying (coating ≥ 200 μm), sandblasting + primer and topcoat
Discharge Method	Gravity discharge (conical bottom, incline angle ≥45°), pneumatic fluidized discharge
Supporting Equipment	Silo-top dust collector, level sensor (radar/rotary paddle), silo-bottom vibrator, air cannon, screw conveyor
Surface Treatment	Shot blasting for rust removal (Sa2.5 grade) + anti-corrosion coating
Service Life	Hot-dip galvanized type ≥20 years / Epoxy-sprayed type ≥15 years / Stainless steel type ≥25 years
Suitable Materials	Cement, fly ash, microslag, limestone powder, dry-mix mortar, grain, etc.

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Panel-Type Cement Silos (Modular Assembly Type)

Parameter Items	Technical Specifications
Capacity Range	30 t / 50 t / 80 t / 100 t / 150 t / 200 t / 300 t / 500 t
Main Material	Q235B carbon structural steel
Panel Dimensions	Single-panel width: 1200–2000 mm; height: 300–500 mm, suitable for container shipping
Assembly Method	On-site assembly and welding, with installation bolts and welding procedure specifications provided
Corrosion Protection	Hot-dip galvanizing (standard configuration) / Epoxy spray coating (optional)
Discharge Method	Gravity discharge (standard conical hopper bottom)
Installation Time	7–15 days (excluding foundation construction)
Suitable Materials	Cement, fly ash, dry-mix mortar, and other powdered materials

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Large Steel Plate Silos (Freestanding)

Parameter Items	Technical Specifications
Capacity Range	500 t / 1,000 t / 2,000 t / 3,000 t / 5,000 t (single silo)
Main Material	Q235B / Q345B high-strength steel plate
Silo Wall Structure	Corrugated steel plate + ribbed reinforcement, patented structural design
Diameter Range	ϕ10 m / ϕ12 m / ϕ15 m / ϕ18 m / ϕ23 m / ϕ30 m

Height Range	15 m–45 m (designed based on capacity and foundation conditions)
Corrosion Protection	Dual protection with hot-dip galvanizing + anti-corrosion coating
Discharge Method	Pneumatic discharge system (fluidized discharge, discharge rate ≥ 60 t/h)
Supporting Systems	Inlet and outlet conveying systems, pulse-jet baghouse dust collection system, material level monitoring system, automated control system
Installation Period	25–45 days (depending on the scale of the silo cluster and foundation progress)
Suitable Materials	Bulk materials such as cement, clinker, sand and gravel, coal, mineral powder, grain, etc.

Chemical Raw Materials Warehouse (Corrosion-Resistant)

Parameter Items	Technical Specifications
Capacity Range	20 t–2,000 t
Main Material	304L / 316L Stainless Steel (optional double-layer corrosion-resistant structure)
Inner Wall Finish	Polished to Ra ≤ 3.2 μm to prevent material buildup
Corrosion Resistance Rating	Suitable for corrosive materials such as acids, alkalis, and salts
Sealing Performance	Fully sealed structure, including an interface for a nitrogen purging system
Hygiene Standards	Complies with food-grade and pharmaceutical-grade hygiene requirements (optional CIP cleaning system)
Supporting Equipment	Nitrogen purging system, temperature monitoring, humidity control, quick-discharge valve

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Key Benefits and Features of the Product

Customized Design, Tailored to Your Needs

Say no to cookie-cutter product catalogs. Our engineers perform structural strength calculations and process design for each raw material silo based on the characteristics of your stored materials, daily throughput, available space, and budget, ensuring that every penny is spent wisely. We provide comprehensive technical support from initial consultation through to commissioning.

Military-grade corrosion resistance, long service life

The silo body undergoes a dual corrosion-protection process consisting of **shot blasting pretreatment (Sa2.5 grade) + hot-dip galvanizing (275 g/m²) or epoxy coating (200 µm+)**. Under normal operating conditions, hot-dip galvanized silos have a service life of over 20 years, far exceeding the industry average. The hot-dip galvanized option is recommended for humid regions and coastal projects, while the stainless steel option is recommended for the chemical industry.

Smooth discharge, anti-bridging design

To address the industry challenge of material arching in powdered materials such as cement and fly ash, we have equipped our systems with silo wall vibrators, air cannons, and pneumatic fluidization discharge systems to effectively prevent bridging and arching, ensuring smooth discharge. Optional radar level transmitters and weighing systems are available to enable automated inventory management.

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Modular Design, Hassle-Free Shipping

The modular cement silo features a segmented assembly design, with each segment's dimensions optimized to fit inside a shipping container, significantly reducing transport volume and ocean freight costs. Export projects have been successfully delivered to more than 50 countries across Southeast Asia, the Middle East, Africa, and South America.

One-Stop Support, Hassle-Free Delivery

From the main raw material silo to the dust collection system, conveying system, level monitoring, and automation control, we provide comprehensive equipment selection and integration services. Customers don't need to run around looking for suppliers; as the sole point of contact, we ensure seamless system integration and successful commissioning on the first attempt.

Applications

Cement and Ready-Mix Concrete Industry: Cement silos are the core supporting equipment for concrete batching plants. Bulk cement is stored in cement silos and then conveyed to the main mixer via screw conveyors. The entire process operates in a fully enclosed system, effectively reducing cement loss and dust pollution.

Typical Configuration: 50t–300t cement silo + silo-top dust collector + screw conveyor + automated control system, suitable for mixing plants of all sizes (commercial concrete plants, on-site mixing plants, and dry-mix mortar plants).

Building Materials and New Construction Materials: Suitable for storing building material additives such as limestone powder, microslag, fly ash, silica fume, and gypsum powder. The product features a corrosion-resistant interior coating that effectively prevents chemical reactions between the materials and the silo walls, ensuring the stability of raw material quality.

Chemical and Petrochemical Industries: Chemical raw material silos are constructed from 304/316L stainless steel and feature a fully enclosed design and a nitrogen purging system, making them suitable for the safe storage of materials such as plastic pellets, resin powders, catalysts, and fertilizer raw materials. Equipped with explosion-proof motors and static discharge devices, these silos meet all applicable explosion-proof safety standards.

Grain and Feed Processing: Large silos are used for the long-term storage of grain crops such as wheat, corn, rice, soybeans, and feed ingredients. These products can be equipped with optional temperature and humidity monitoring systems, ventilation systems, and fumigation systems to meet the requirements for preserving freshness and preventing insect infestation and mold growth during grain storage.

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Coal and Energy Industry: Suitable for the storage and transshipment of energy materials such as raw coal, washed coal, pulverized coal, and activated carbon. Compared to traditional open-air stockpiles, large-scale silo solutions can reduce dust pollution by more than 90%.

Construction Sites and Temporary Storage: Small mobile raw material silos (10–50 metric tons) are widely used in highway and railroad construction projects, mining sites, and temporary construction sites. They can be quickly relocated and reused. With their standardized modular design, installation takes only 3–5 days, significantly shortening the project construction cycle.

Why Choose Us?

Expert Technical Team: Over 10 years of experience in R&D of mixing equipment, providing customized solutions

Quality Assurance: Rigorous quality control system; ISO 9001-certified company

After-Sales Service: Global service network, 24-hour response, and lifetime technical support

Success Stories: Serving over 500 companies across more than 20 countries and regions

FAQ

1.

Q: What is the minimum order quantity for your products?

A: For larger equipment such as mixers, our minimum order quantity is one unit; for smaller products such as valves and fittings, the minimum order quantity ranges from 50 to 100 pieces. Please contact our sales representatives to confirm the specific minimum order quantity.

2.

Q: From which port do you ship?

A: Since our company is located in Qingdao, most of our shipments depart from the Port of Qingdao.

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3.

Q: Are you a factory or a trading company?

A: We are a manufacturing company with our own factory; all our equipment is produced in our factory's production lines.

4.

Q: What materials are typically used for raw material silos?

A: Raw material silos are primarily constructed from Q235B/Q345B carbon steel plates. Depending on the stored material and operating conditions, corrosion-resistant treatments such as hot-dip galvanizing, epoxy coating, or stainless steel (304/316L) may be selected to ensure the silo's long-term service life in humid or corrosive environments.

5.

Q: What is the capacity range for raw material silos?

A: Our standard raw material silos range in capacity from 10 metric tons to 5,000 metric tons, and we offer customization based on customers' specific needs. The specific capacity selection requires a comprehensive evaluation that takes into account raw material density, daily consumption, unloading frequency, and site conditions.

6.

Q: What is the difference between modular cement silos and monolithic cement silos?

A: Modular cement silos feature a modular design; the silo body is divided into several modular components at the factory and assembled and welded on-site after transportation, making them suitable for projects with limited transportation conditions. Monolithic cement silos are fully welded into a single unit at the factory, resulting in a more complete structure and greater seismic resistance, making them suitable for short-distance projects with good transportation conditions.

7.

Q: What are the different methods of unloading raw material silos?

A: The unloading methods for raw material silos are primarily divided into two types: gravity unloading (conical bottom) and pneumatic unloading (fluidized unloading). The former relies on the material's own weight to fall naturally and features a simple structure; the latter uses low-pressure air to fluidize the material, resulting in smoother unloading and making it suitable for powdered materials such as cement and fly ash.

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8.

Q: Can the raw material silo be used outdoors? Does it require corrosion protection?

A: Yes, our raw material silos are designed for outdoor installation. For outdoor and corrosive environments, we offer a variety of corrosion protection solutions, including hot-dip galvanizing (zinc coating $\geqslant$ 80 μm), epoxy powder coating (coating $\geqslant$ 200 μm), and stainless steel. We recommend selecting the appropriate corrosion protection grade based on the stored material and local climate conditions.

9.

Q: What is the service life of a raw material silo?

A: Under normal operating and maintenance conditions, the service life of a hot-dip galvanized raw material silo is generally 15–25 years, that of an epoxy-coated silo is 10–20 years, and that of a stainless steel silo is 20–30 years or more. The actual service life depends on the material, corrosion protection grade, characteristics of the stored medium, and frequency of maintenance.

10.

Q: How long does it take to install a raw material silo?

A: On-site installation of a standard raw material silo (small capacity ≤ 100 metric tons) typically takes 7–15 days; installation of a large raw material silo (500 metric tons or more) or a silo cluster takes 20–45 days. The specific duration depends on the number of silos, the progress of foundation construction, and on-site coordination conditions.

11.

Q: What types of materials can be stored in the raw material silo?

A: Our raw material silos are suitable for a wide range of bulk materials, including but not limited to: cement, fly ash, ground granulated blast furnace slag, limestone powder, grains (wheat, corn, rice, etc.), sand and gravel aggregates, chemical raw materials (plastic pellets, resin powder), coal, and mineral powder. Depending on the characteristics of the material, we can customize the silo wall material and discharge system accordingly.

12.

Q: How do you prevent material capping or bridging in raw material silos?

A: We incorporate multiple anti-capping design features: silo wall vibrators (pneumatic or electric), fluidized discharge systems, air cannons for breaking up material bridges, inverted conical silo bottom structures, and optimized silo wall angles. For materials prone to capping, we recommend informing us during the selection process so that we can design a tailored anti-bridging solution.

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13.

Q: What information is needed to request a quote for raw material silos?

A: To provide you with an accurate quote for raw material silos, please provide the following information: ① Name and characteristics of the material to be stored (e.g., particle size, moisture content, corrosiveness); ② Required capacity (metric tons); ③ Number of silos; ④ Location of use (indoor/outdoor); ⑤ Preferred unloading method; ⑥ Site constraints (length × width × height). Our engineers will provide a preliminary proposal within 24 hours.

14.

Q: Does a raw material silo require a foundation?

A: Yes, a raw material silo must be accompanied by a specialized foundation design.

15.

Q: What applications are small raw material silos (10–50 metric tons) suitable for?

A: Small raw material silos (10–50 metric tons) are widely used in: small and medium-sized mixing plants (concrete/dry-mix mortar), small cement product factories, raw material storage in laboratories or R&D centers, temporary on-site storage at construction sites, food processing plants (flour, powdered sugar, etc.), and small grain silos. They have a small footprint and do not require a large foundation, making them suitable for settings with limited space.

16.

Q: What auxiliary equipment is available for raw material silos?

A: We offer a complete system for raw material silos, including: ① Level measurement systems (radar level transmitters/load cells); ② Discharge systems (vibrating discharge devices/fluidized discharge devices/air cannons); ③ Dust collection systems (silo-top dust collectors/pulse-jet baghouse dust collectors); ④ Conveying systems (screw conveyors/chain conveyors/pneumatic conveying); ⑤ Control systems (level alarms/overfill protection/automated control).

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