

ASTECC



STORAGE SILOS

For Hot Mix Asphalt Facilities



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THE STORAGE SILOS

Only Astec Can Guarantee Storage

Astec silos store mix for four days* without loss of mix quality. That's true storage. And we guarantee it in writing.

Use the silos as a conventional surge bin during the busy time of day. At day's end avoid time-consuming start/stop operations and begin filling silos while continuing loadout. The next work-day, begin selling mix right away from full silos. Nobody has to wait for mix. Uninterrupted production runs allow you to maximize equipment efficiency and reduce material waste. Incorporate multiple silos in your plant layout and you will be ready to meet customer needs for a number of different mixes. That's how Astec storage silos reduce operating costs and improve plant operating-efficiency.

Astec hot mix storage systems come complete with drag conveyors, traverse conveyors and batchers. Bucket elevators are available. Standard design is to Seismic Zone IIA conditions and 150 miles per hour wind velocity. Our structural engineering staff will design your foundations based on soil conditions at your site.

Service Sets Us Apart

Our in-house service technicians and our traveling service personnel are responsive and available around the clock. Talk to anyone who runs Astec equipment. Astec service is unmatched in the industry.

* polymer modified and open-graded mixes excluded



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Astec's innovative batcher helps eliminate mix segregation. It is designed to ensure that the quality of mix that leaves the drum is the same quality stored in the silos.

Fill Silos Without Segregating the Mix

The mix moves by drag conveyor or bucket elevator into a three-ton batcher atop the silo. When full, the batcher releases the slug of mix. Mix drops through the rapid-opening clam gate into the silo and flattens on impact. Batchers with a single radial-type gate can off-center the drop. Our batcher clam gates center the drop into the silo and form a flattened mix surface, which prevents mix segregation.

Automatic Batcher Gates

The precisely activated batcher gates operate automatically. When the batcher is full the cylinder-operated clam gate opens. Mix discharges in bulk, and the gate closes just before the batcher is completely emptied. This way mix always collects in the batcher first and never falls straight from the drag conveyor into the silo. Sensors control the proper opening and closing of the batcher.

Keep Silo Pressure Equalized

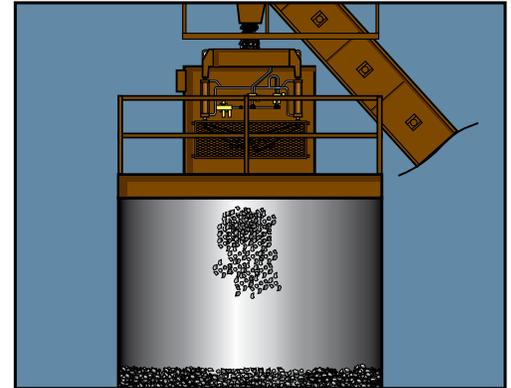
As the mix level rises, it displaces air in the silo. Vents in the batcher enclosure allow this air to escape and keep pressure in the silo equalized.

Bin Indicators Show Mix Level in Silos

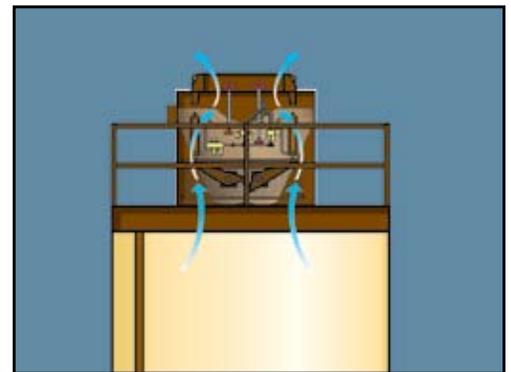
Each Astec silo has a high and a low radio-frequency bin indicator. Mounted on top of the silo, the sensing rods extend down into the mix. The low bin indicator reaches deep into the mix; the high bin indicator is short. Both the high and low bin indicator information is transmitted to the control house so that personnel can track mix level. The high bin level indicator signal allows the operator sufficient time to finish loading mix already in the transfer conveyor, while the low signal informs the operator to begin filling the silo before the cone surface liners become exposed.



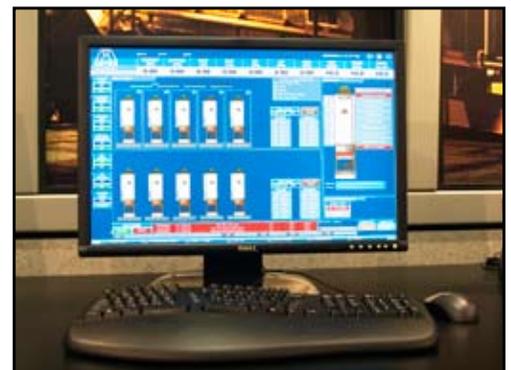
The Astec batcher is designed to minimize segregation.



The batcher releases a slug of mix that flattens upon impact, eliminating segregation.



Air displaces through the batcher as the mix level rises, keeping the silo equalized.



High and low bin indicators inside the silos relay mix information to the control house.



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The Astec silo cone is exceptional. It prevents segregation and mix build-up with its mass-flow slope, it is equipped to resist wear, protected from heat loss, and its gate seals the silo for storage.

Cone Design Prevents Mix Segregation

Astec silo cones are taller and built with a steeper angle than other brands. The Astec design provides optimal material flow. Third party and Astec research shows the precise angle at which the entire column of mix flows down evenly to be 66°. The steeper angle of the cone provides true first-in/first-out inventory rotation, there is no mix buildup on silo walls, and mass flow loadout minimizes mix segregation. Mass flow occurs when mix flows out across the entire silo cross-section and that only happens with the correct cone angle

Prevents Drops Into the Cone

If the mix level falls below the top of the cone, the level indicator signals the silo discharge gate to remain closed. To open the gate and empty the cone in this situation, you manually override the gate controls. This is because if mix dropped from the batcher is allowed to impact the cone directly it can cause unnecessary wear, or segregate on impact against sloped cone walls.

No Heat Loss Through Astec Cones

Unheated cones cause excessive mix heat loss. Our heating system operates during fill/run and storage modes. Together with the cone insulation the system works to keep mix in the cone hot.

A silicone electrical blanket surrounds the cone. A heat indicating controller turns the blanket on when the temperature drops below a selected point. This sensor saves you money because the energy to heat the cone is used only when required. Hot-oil heating is available as an alternative to the electric blanket.

Four inches of insulation on the outside of the cone's bottom portion help hold in the heat. A partition covered with a six-inch layer of insulation forms a warm, dead-air space around the top portion of the cone for even greater energy savings.

Protect Critical Areas

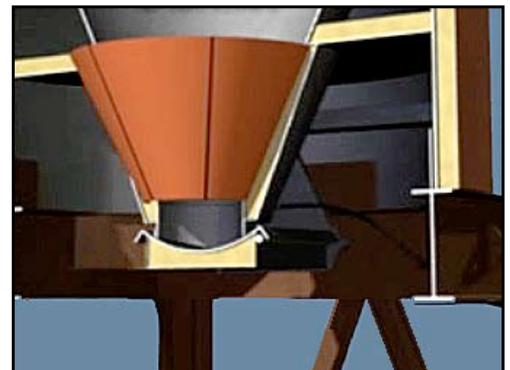
Mix can be abrasive and can wear on the area where the cylinder and silo cone meet. Astec lines this area with abrasion-resistant steel liners. Optional ceramic liners are available.



Steep 66° angled cones allow mix to move by "mass flow" that prevents mix build-up on silo walls.



Mass flow loadout minimizes mix segregation.



Cone insulation and an electrical blanket surround the cone preventing excessive heat loss.



Optional ceramic liners in the bottom of the cone help prevent excessive abrasion.



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Astec silos are insulated so well because they are designed as a storage system guaranteed to keep asphalt hot for up to four days. Many operators have even reported storing mix for up to a week with no significant loss in mix quality.

Our Silos Keep Mix Hot

Twelve inches of insulation at silo tops, four inches around the cone and six inches along the cylinder keep the mix hot. Batchers are insulated as well because uninsulated batchers are a major source of heat loss.

Two layers of stiff sheet insulation are staggered to eliminate heat-leaking seams along the silo cylinder. These strong batts of insulation provide support the silo skin. The aluminum skin has a baked enamel finish that will look nice for years to come.

Store Mix Longer

Astec uses thick, full R-value non-compressed insulation around the silo cylinder. Super insulation on Astec silos helps you to store mix for longer periods.

Seal Silos in Storage Mode

In storage mode it is crucial to seal the silo. Oxidation, or premature hardening of the mix, happens in the silo when the mix is exposed to air. In storage mode Astec silos are completely sealed from top to bottom.

Seal the Top

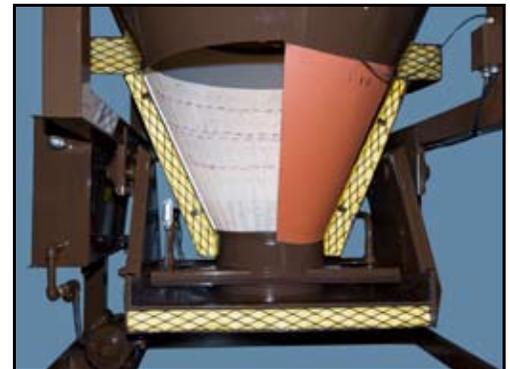
In storage mode the cylinder-operated gate at the top of the batcher is completely sealed. The gate runs in rails which tightly wedge it against a ring of grease. This forms a tight seal and keeps air from entering at the silo top. When filling operations begin again, the gate is opened and remains open until filling operations stop. An air actuated grease pump replenishes the grease and ensures a continued, perfect seal.

Seal the Bottom

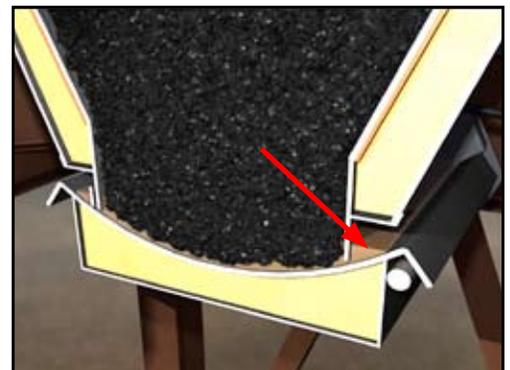
The exclusive design of Astec's discharge gate (U.S. patent number 3,949,907) completely seals the bottom of the cone when the silo is in storage mode. The heated and insulated discharge gate closes to completely cover the cone opening. Oil is pumped into the gate to seal the bottom silo opening. The oil reservoir is located by the silo legs, and a motor-driven pump moves the oil from the reservoir into the gate. A sensor monitors the oil level in the gate and controls the pump. When the silo is taken out of storage mode, the pump is reversed and the oil is automatically withdrawn from the gate.



Twelve inches of insulation are installed in the top of the silos.



Four inches of insulation surround the cone.



Astec's discharge gate is completely sealed with oil allowing no heat to escape.



The oil reservoir pumps oil from the reservoir to the discharge gate.




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WATKINSVILLE, TENNESSEE U.S.A.

DANGER


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The Astec drag conveyor is tough. Formed from steel and lined with Ni-Hard, it is made to withstand the demands of asphalt production

Tough Roller Chains Hold Thick Slats

The drag conveyor reaches from the mixer exit chute to the top of the silos. Strong, wear-resistant, 6-inch roller chain runs from bottom to top, with 3/4-inch thick, 7-inch deep, steel, horizontal flights attached every 12 inches. This tough chain has an ultimate strength of 140,000 lbs and rollers hardened to Rockwell 57.

Astec Drag Chains Ride Smoothly

With wide idlers the flights don't skim or "hydroplane" over the mix. Mounted on floating hold-down bearings, these idlers also support the return portion of the chain and minimize vibration. As a result there is less wear to the sprockets, liners, and chain. Floating hold-down bearings have grease piping that lets you lube them from both sides of the conveyor stair.

We Give You Segmented Sprockets

The drag chain rides on segmented sprockets located at the head and tail shafts. Induction hardening to Rockwell C60 gives the sprockets a uniform, deeply hardened wear surface.

Each sprocket bolts to a split hub. You can replace the sprocket one piece at a time without removing the chain, which drastically reduces the time and effort required. The bottom sprocket is adjustable so the drag chain can be tightened.

Astec Drag Conveyors are Unmatched

The top sprocket is located a good distance above the conveyor discharge. This, plus the 9° backward slope of the flights, makes sure that flights are completely discharged by the time they reach the top sprocket. No mix residue is dropped on the sprocket, so the sprocket and chain last much longer.

Liner and Chain Warranty

Astec lines the bottom and sides of the conveyor with abrasion resistant liners. The liners are guaranteed to 2,000,000-tons of mix and a 750,000-ton prorated chain warranty.

Traverse Conveyors Load Batcher

The drag conveyor discharges into the traverse conveyor installed atop batchers. The operator selects the silo to be filled, and the traverse empties its contents into the designated silo's batcher.



Extra-thick, high-capacity slats move the mix up to the batcher.



Idlers prevent the flights from skimming over the mix to help eliminate back-ups that could strain motors and reduce conveying capacity.



Segmented sprockets can be replaced one piece at a time without removing the chain, greatly reducing time and effort.



The drag conveyor discharges into the traverse conveyor which deposits mix into the designated silo.



SCALE #3
SILO 7 8 9

SCALE #2
SILO 4 5 6

Spray Saver

Spray Saver

ATTENTION
NO CLIMBING
ON STRUCTURE
DURING OPERATION
OR MAINTENANCE
WORK

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The engineers at Astec thought through the details to design silos that will stand up to the many tons of mix that you will store over time.

Heavy-Duty Construction Delivers Reliable Performance

The walls of the silo are made from rolled 1/4 inch - thick steel plate joined by structural welds. Jogged radial joints eliminate destructive wear at the joints.

Silo legs are 15 feet long, providing about 13-1/2 feet, of clearance for trucks from the top of the truck scale. Legs and the silo support frame is made of heavy, structural, wide-flange beams. Standard construction is to Seismic IIA conditions with stronger construction available wherever necessary.

Stairs, Handrails, and Top Platforms

A grated stairway runs parallel to the drag conveyor. It provides access to conveyor components and to the top of the silos. As an option, a second stairway can be supplied on the other side of the drag conveyor.

Plenty of Safe Working Space on Top

The Astec work platform atop the silos is big. Square corners increase its size even more over round platforms. Safety features include skid resistant paint on the platform surface and guard-rails made of welded square tubing. Each silo platform's kick plates join with the platform of the adjacent silo, preventing spillage from the top.



Silo walls are made from rolled 1/4" thick steel plate joined by structural welds.



Silo legs provide over 13 feet of truck clearance.



The drag chain at the tail shaft of the drag conveyor rides on a segmented sprocket.



The spacious platform leaves room to work.

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With an Astec silo, you will have an opportunity to configure your facility with options to better serve your customers and your community.

Optional Blue Smoke Packages

Blue smoke (hydro-carbon vapor) is generated at mix transfer points. Blue smoke is actually a haze of petroleum droplets suspended in the air. The blue smoke collection system prevents the vapor from escaping when asphalt is transferred from the mixer to the storage silo. The blue smoke system captures the vapor and uses a fan to transport it back to the drum where it is incinerated by the burner flame. The result is extremely effective. Virtually no blue smoke escapes into the air during silo filling.

Load-out tunnels and fiberbed mist collectors can also be supplied for installations where environmental compliance is a priority.

Low Profile, Electronic Scales

The LPSII truck scale is a totally electronic scale with a low profile. It only needs small foundation pads at each load cell. Weigh sections have checkered-steel deck plates. The scale is wired in conduit. When a silo is used without a truck scale, Astec can provide an optional weigh batcher.

Control All Silo Functions

Motor starts and stops, filling operations and manual loadout are handled from one central location in the control house. The operator also monitors current draws, bin indicators and cone heating information from here. Choose either the latest, state-of-the-art TCII controls utilizing a computer screen, keyboard and mouse, or the traditional analog control panels.

Silo Diameter and Capacity

Astec silos are available in either a 12 ft. (3.55 meters) or 14 ft. (4.27 meters) diameter of the following capacities:

Tons	100	150	200	250	300
Metric Tons	91	136	181	227	272

Capacities are based on 120 lbs/cu.ft. for mix (0.5 metric tons / cu. meter).



Blue smoke systems collect hydro-carbon vapors at mix transfer points.



Load out tunnels capture unwanted vapors.



Fiberbed mist collectors help meet stringent environmental compliances.



Optional weigh batchers can be used on silos without truck scales.

