

HEATEC® THERMO-GUARD® & HELI-TANK® SERIES ASPHALT STORAGE TANKS





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USED OIL
NO SMOKING

FLAMMABLE

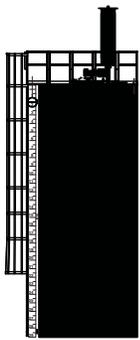
DIESEL

NO SMOKING

General Mills

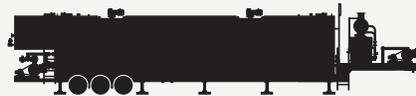
ASPHALT STORAGE TANKS

Astec liquid AC storage tanks feature high quality construction and unmatched efficiency, making Astec tanks the clear choice over any other. Standard features unique to Astec built tanks assure operation is safe and economical. We pre-fit all the connecting piping and equipment before it leaves the factory making installation much quicker and easier once it arrives to the job site. We offer a variety of sizes and configurations that can be fully customized.



Thermo-Guard® Vertical Tanks

The vertical orientation of Thermo-Guard tanks have a smaller footprint and minimizes oxidation of the asphalt. They come fully insulated, including the tops and bottoms, to maximize efficiency. Standard sizes range from 10,000 to 35,000 gallons. Other sizes are available upon request.



Heli-Tank® Portable Tanks

A full tank farm system in a portable package. The tanks can be partitioned to store different AC grades or polymer modified asphalt in a single unit. A hot oil heater sits on the tongue of the trailer. Packages are fully customizable with the equipment you need. Standard sizes range from 10,000 to 35,000 gallons.



Welbilt™ Horizontal Tanks

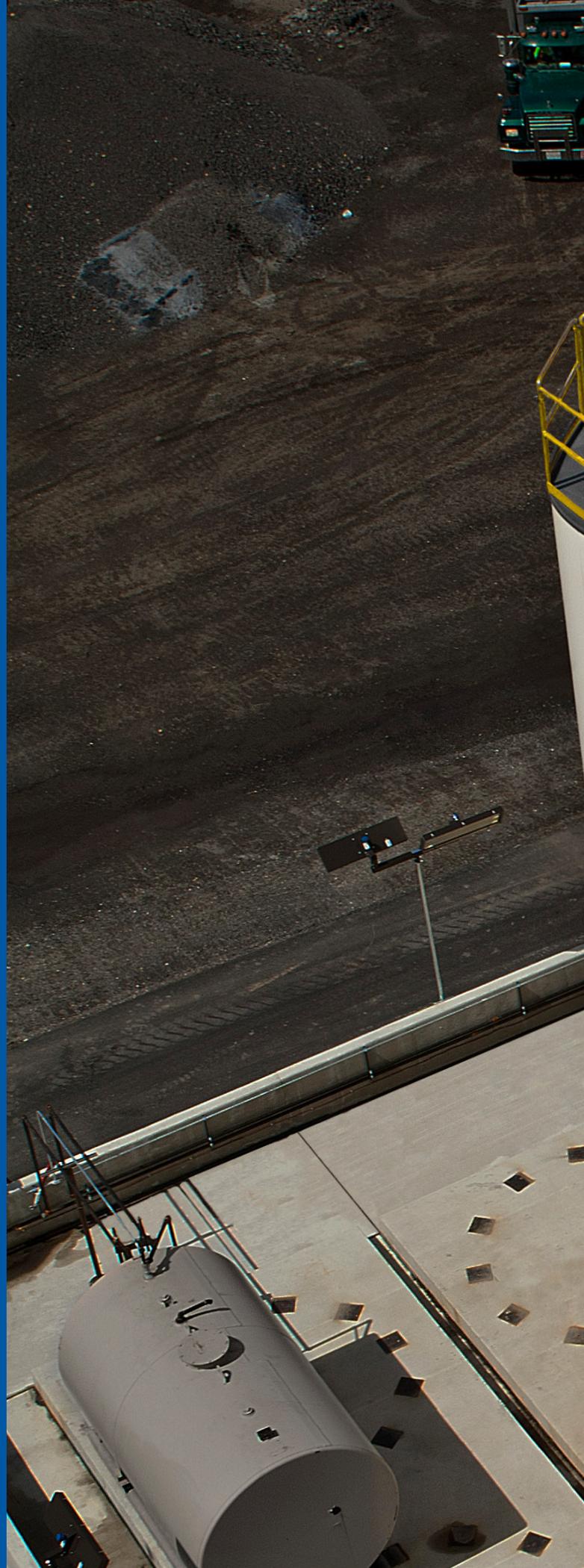
Horizontal tanks can be stationary or mounted on a chassis for portability. They offer high thermal efficiency. Like the Heli-Tank, they can be partitioned to store different liquids in a single tank. Standard sizes range from 10,000 to 40,000 gallons.

THERMO-GUARD®

VERTICAL TANKS

THERMO-GUARD® is the trademark we use to distinguish our current line of vertical asphalt storage tanks. Astec Thermo-Guard tanks have features that cut heat loss to an absolute minimum—at a reasonable cost.

The tanks are usually built to order and can be configured to suit your exact needs. Many options are available, including the components for mixing.





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HOT ASPHALT CEMENT
30,000 GAL.

THERMO-GUARD®

VERTICAL TANKS

Advantages of vertical tanks

Vertical tanks minimize oxidation of the asphalt because the surface area of the asphalt in contact with air inside the tank is much smaller than in horizontal tanks. This is especially important for PMAC (polymer-modified asphalt cement), which oxidizes faster because it is maintained at higher temperatures.

Another advantage of a vertical tank is the minimal ground area it occupies. Vertical tanks have smaller footprints than horizontal tanks. You can put four vertical tanks in the ground space occupied by a single horizontal tank.

Insulation

The amount of insulation used on Astec vertical tanks sets them apart from the competition. More insulation means less heat loss.

We fully insulate all tank surfaces. The top bulkhead has a double-wall that encloses 6 inches of fiberglass insulation. Outer surfaces of the side walls also have 6 inches of fiberglass insulation.

Unlike other manufacturers, we insulate the tank bottom. Its inner surface has 3-inch foam glass insulation with a metal cover to protect the insulation. This feature alone results in a significant reduction in heat loss.

The difference in heat loss of our 30,000 gallon vertical tank and one of our competitor's tanks is amazing. Theirs has no insulation on its bottom and only 4 inches of insulation on its top and sides. Theirs will lose 2.582 billion (2,582,000,000) Btu per year more than ours in 20 years! That is equal to 19,517 gallons of No. 2 fuel. Some tanks only have 3 inches of insulation and lose even more heat.



3" Foamglass Insulation on the Tank Bottom

PMAC

Thermo-Guard tanks provide a better mixing, heating and storage solution for PMAC than competitive tanks.

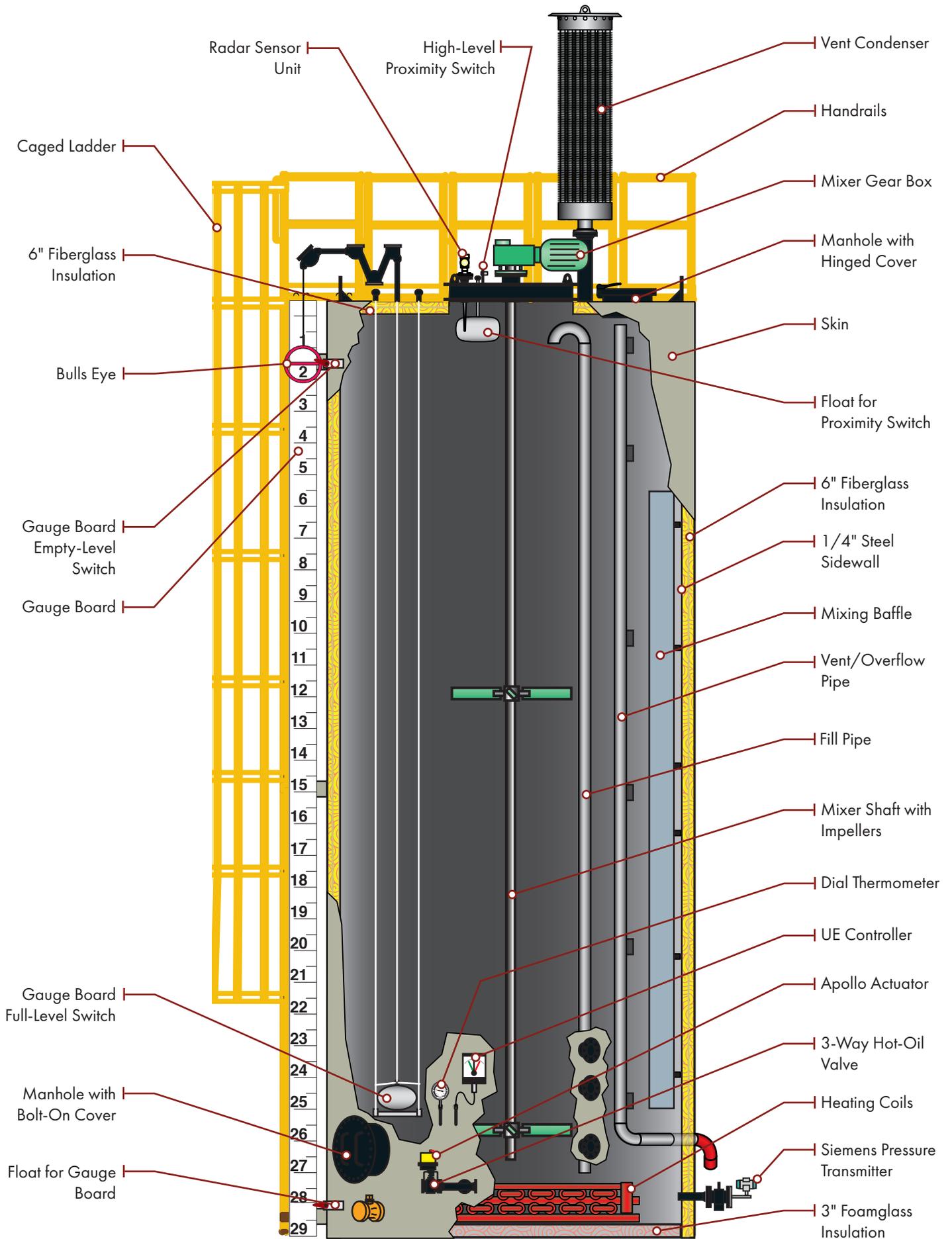
To achieve proper blending of PMAC, the virgin asphalt is heated to temperatures higher than normal. So, insulation is more important than ever. And design of the mixing system is just as important.

Our mixing system keeps the polymers in suspension to prevent them from separating from the virgin asphalt.

The number, size, pitch, location and rotational speed of the impeller blades are key factors in maintaining mixture consistency. Moreover, the baffle and piping are carefully arranged to keep material from hugging the tank wall and to minimize stagnation zones (see illustration at left).

The mixer has a 7.5 hp motor with a totally-enclosed, fan-cooled (TEFC) housing. This housing minimizes hazards in the event any fumes escape the tank. The mixer has a turnover of 5,593 gallons per minute. Its large 3-inch mixing shaft has impellers at two levels for increased efficiency. The impellers run at 42 rpm.



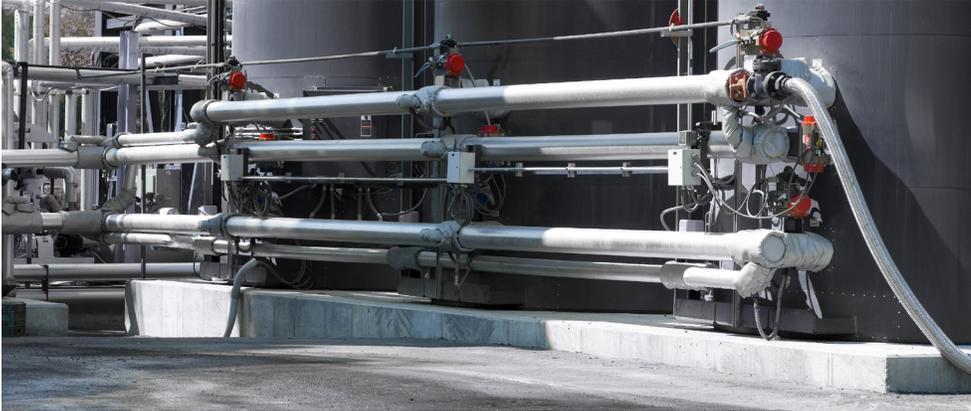


*TANK SHOWN WITH OPTIONAL EQUIPMENT

THERMO-GUARD® VERTICAL TANKS

Temperature control

Temperature control is achieved by a temperature sensor, a controller and a three-way valve. The valve controls flow of hot oil to the tank coils. The valve opens and closes in response to the controller to maintain the stored asphalt at set temperature. Heating is automatically shut off before the asphalt level drops below the tops of the heating coils.



Piping and pipe insulation

Connections for piping are standardized to simplify installation. This is particularly useful when installing multiple tanks. It also makes it easier for you to add new tanks to your facility as it grows. Heatec-fabricated piping is also available, making installation even easier.

Significant savings are possible by insulating asphalt and hot oil piping. For example, one inch of insulation on jacketed 4" asphalt pipe and flanges could save over 21,756 gallons of No. 2 fuel a year per 100' of pipe!

Overflow protection

All of our vertical tanks offer protection against accidental overflow. A proximity switch mounted atop the tank can be wired to automatically shut off the unloading pump. The switch is activated magnetically by a short pipe attached to a float. It will automatically shut off power to the unloading pump when the asphalt lifts the float to a predetermined level. (See photos.) An optional gauge board or radar level sensor can be used as the primary shutoff control so that the proximity switch becomes a backup.

Fast heating

Thermo-Guard tanks heat faster than competitive tanks. That's because our tanks have two to three times the amount of heating surface normally provided on other tanks.

We put two layers of highly-efficient finned heating coils in the bottom. When in use hot oil flows through the coils to heat the material in the tank. The time it takes to raise the temperature of asphalt is related to the amount of heating surface. For example, suppose you get a tanker load (6,000 gallons) of asphalt that needs to have its temperature raised only 10 degrees, from 290 to 300°F. Our tank can do the job in only 20 minutes.

Tanks with less heating surface will take longer. Long waits for AC to reach temperature can disrupt your work flow. The table on the right compares times for competitor tanks and different temperature increases.

Shell and skin

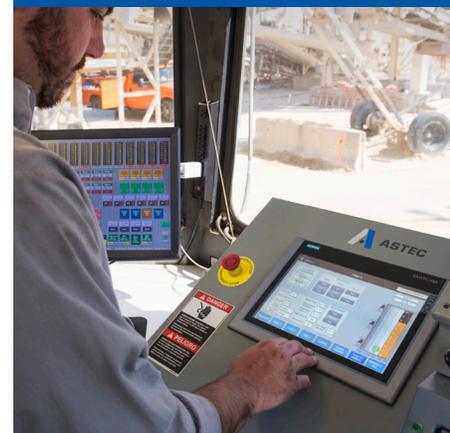
The tank has a steel shell of welded construction. The outer skin is aluminum, requiring virtually no maintenance. Baked-on painted aluminum is standard. We also offer skin in an embossed natural finish, and other colors are available. Decals showing the Astec name and logo are included. Other color finishes, stripes and decals with your name or logo are available by request.

Options

Tanks larger than those listed are available by special order. Tanks manufactured to meet UL 142 specifications and stamped to show compliance are also available. Tanks for blending are available with load cells and legs. An electric heating system is also available in lieu of heating coils.

Pressure transmitters that indicate liquid level and many other options are available.

Automated Controls and Valves



Key Characteristics of Thermo-Guard Tanks

MODEL	CAPACITY GALLONS	HEATING SURFACE SQ. FT.	HEIGHT FT.	DIAMETER FT.	WEIGHT LBS
TAV-10	10,000	550	16' 11"	11' 11"	17,825
TAV-15	15,000	550	24' 11"	11' 11"	21,025
TAV-20	20,000	1100	30' 11"	11' 11"	23,625
TAV-25	25,000	1100	38' 11"	11' 11"	26,625
TAV-30	30,000	1100	44' 11"	11' 11"	28,861
TAV-35	35,000	1100	50' 11"	11' 11"	30,905

Capacities shown are nominal capacities. Handrails add 3.5 feet to the height of the tank.
Weight shown includes ladder and handrails. Mixers add from 1,260 to 1,884 lbs.

Time to Raise the Temperature of a 6,000 Gallon Load of Asphalt

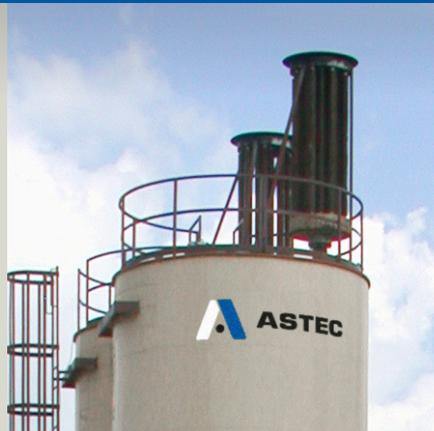
TEMPERATURE INCREASE	THERMO-GUARD 20,000 GALLON VERTICAL TANK 1,100 SQ FT HEATING SURFACE	COMPETITOR A 20,000 GALLON VERTICAL TANK 292 SQ FT HEATING SURFACE	COMPETITOR B 20,000 GALLON VERTICAL TANK 575 SQ FT HEATING SURFACE
290 °F to 300 °F	20 minutes	56 minutes	32 minutes
280 °F to 300 °F	38 minutes	107 minutes	60 minutes
340 °F to 350 °F (PMAC)	39 minutes	114 minutes	62 minutes
330 °F to 350 °F (PMAC)	70 minutes	207 minutes	113 minutes

Based on a hot oil temperature of 400 °F with a flow rate of 50 gpm

Pressure Transmitter



Fume Condenser



Safe Sampling System



HELI-TANK®

PORTABLE TANKS

The Heli-Tank unit combines a hot oil heater with a heated asphalt storage tank. Available in six different sizes with capacities from 10,000 to 35,000 gallons. Numerous options are available.





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HELI-TANK® PORTABLE TANKS

Details

Temperature controls are the same as those on vertical tanks. Tank walls are made from A-36 steel plate. Tank heads are also steel, flanged and heavily reinforced with channel stiffeners. Access ladders are provided both inside and outside the tank. Tanks feature the same type of overflow protection described earlier for our vertical tanks.

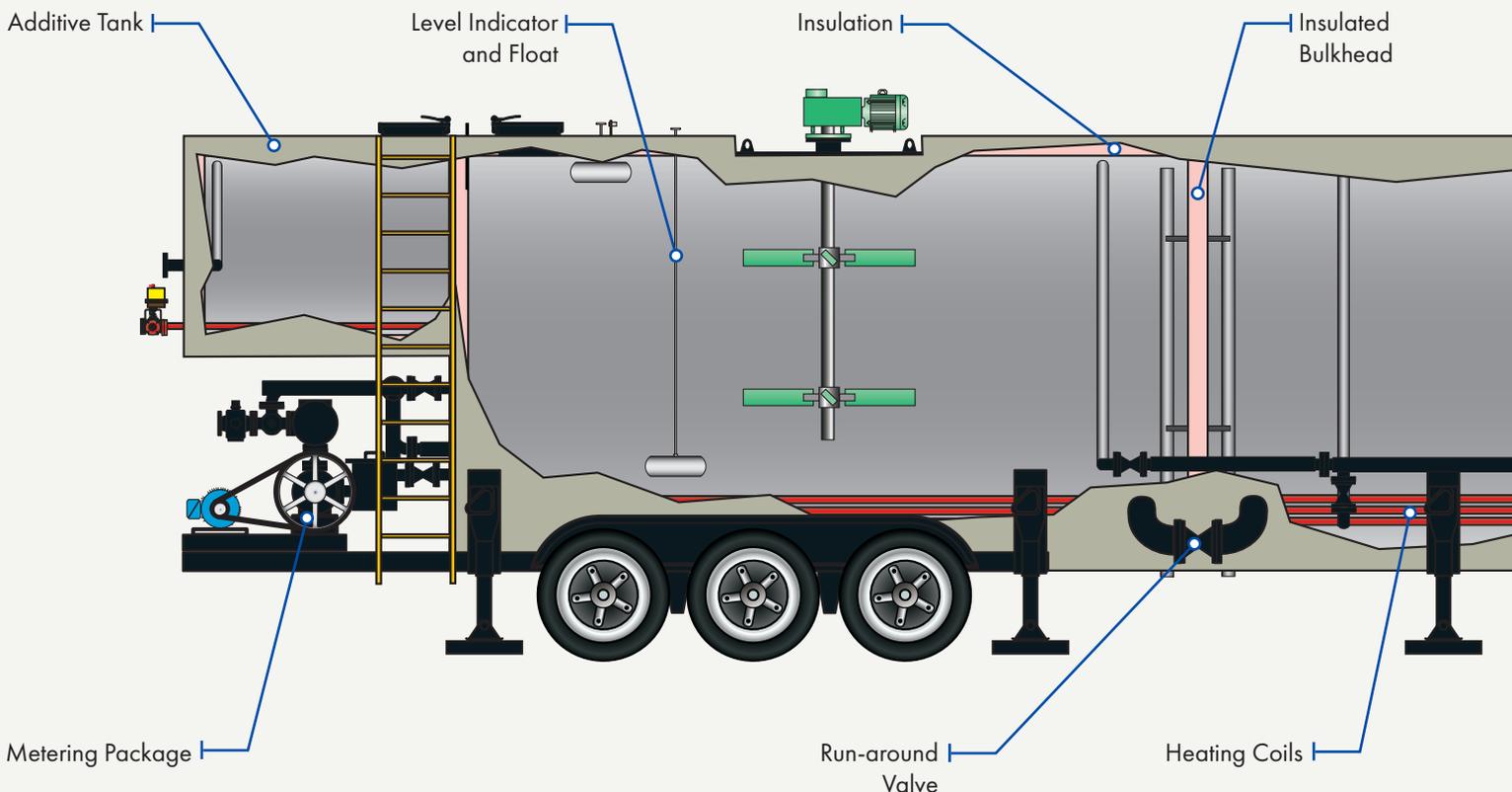
Tanks are covered with an aluminum skin and six inches of fiberglass insulation. Standard skin has painted aluminum. Other finishes and colors are optional.

Storage tank options

Internal bulkheads are optional. They divide the storage tank into compartments, which can be used for different grades or types of liquid AC, for fuel or for additives. The bulkheads are double-walled and insulated. Various combinations of heating coils and controls can be furnished.

Heating Coils

The storage tank has serpentine heating coils. Liquid asphalt in the tank is heated by hot oil flowing through the coils. The coils are formed into three layers, each with ten coils. Coils are made from rugged 2-inch schedule 40 seamless pipe and run the full length of the tank or compartments. The accompanying table shows surface areas of the heating coils in each tank model.



Key Characteristics of Heli-Tanks

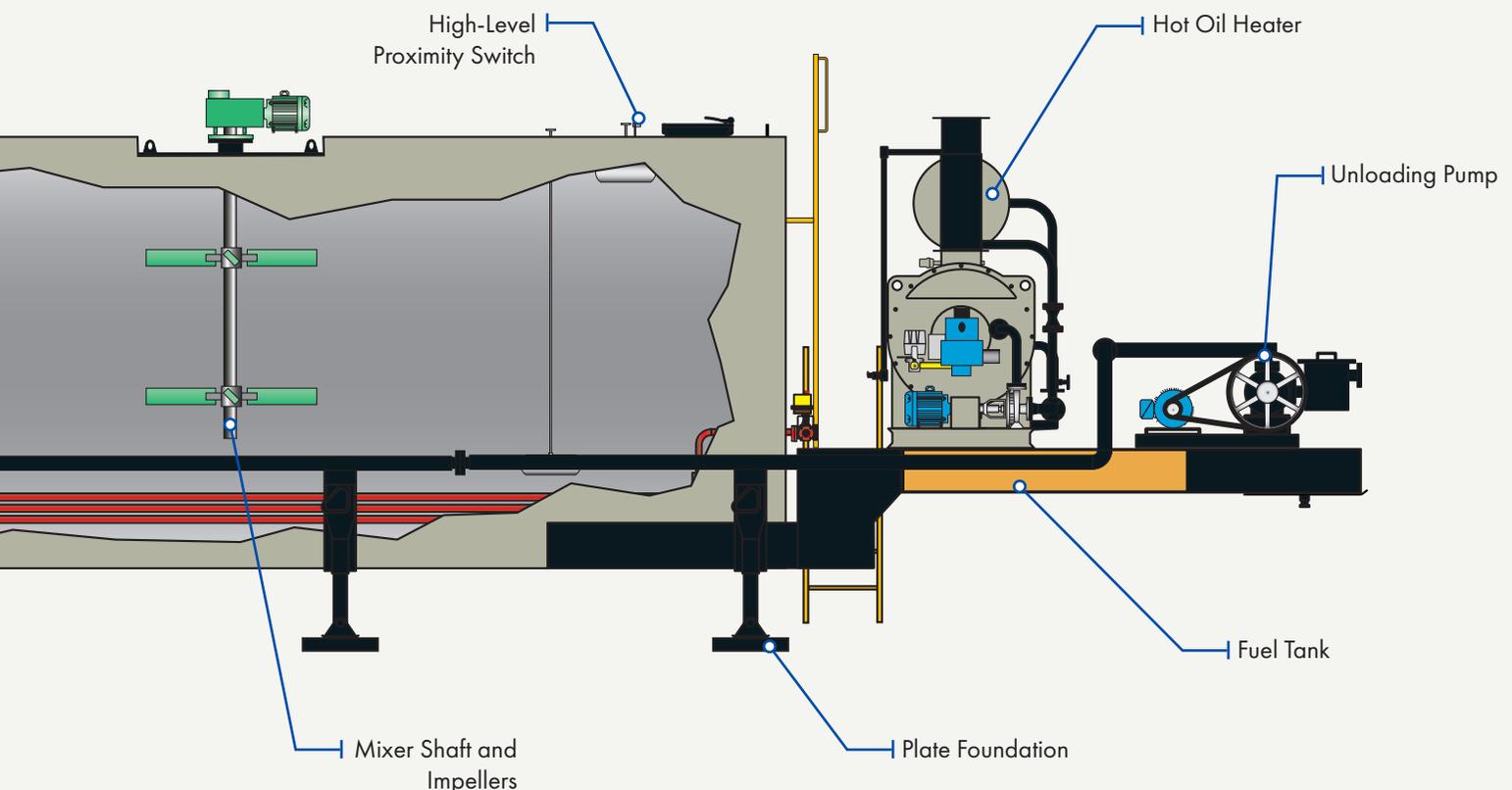
MODEL	CAPACITY GALLONS	HEATING SURFACE SQ. FT.	LENGTH FT.	HEIGHT FT.	AXLES	HOT OIL HEATER	WEIGHT LBS
HT-10P	10,000	231	29' 0"	14' 3½"	Single	HCS-100	17,825
HT-15P	15,000	380	37' 0"	14' 3½"	Single	HCS-100	21,025
HT-20P	20,000	329	48' 0"	14' 3½"	Tandem	HCS-100	23,625
HT-25P	25,000	679	56' 0"	14' 3½"	Tandem	HCS-100	26,625
HT-30P	30,000	828	64' 6"	14' 3½"	Triple	HCS-100	28,861
HT-35P	35,000	977	72' 0"	14' 3½"	Triple	HCS-100	30,905

Capacities shown are nominal capacities. Weights are approximate and include HCS-100 heater plus optional plate foundations, metering package, and unloading package. Rear frame extension adds approximately 7 ft. to overall length.

Versions for polymers

Special versions of the Heli-Tank are available for use with modified asphalt. They heat and store either PMAC (polymer-modified asphalt cement) premixed at asphalt terminals or asphalt cements that incorporate GTR (ground tire rubber) mixed at the hot mix plant. Both versions maintain the PMAC at higher than normal temperatures. Pump and piping systems are oversized because PMAC has a higher viscosity than virgin asphalt.

These special versions use motor-driven mixers to keep material in suspension. The mixers are mounted in the top of the tank and spaced for optimum mixing.



HELI-TANK®

PORTABLE TANKS

Piping options:

- 3 or 4 inch piping
- AC lines with hot oil jackets
- Rigid AC lines with 12-degree ball joints
- Insulation on hot oil and AC lines
- Piping to drum mixer and other tanks
- 1-1/2-inch hot oil jumper lines
- Power-actuated valves for AC lines



Additive tank option

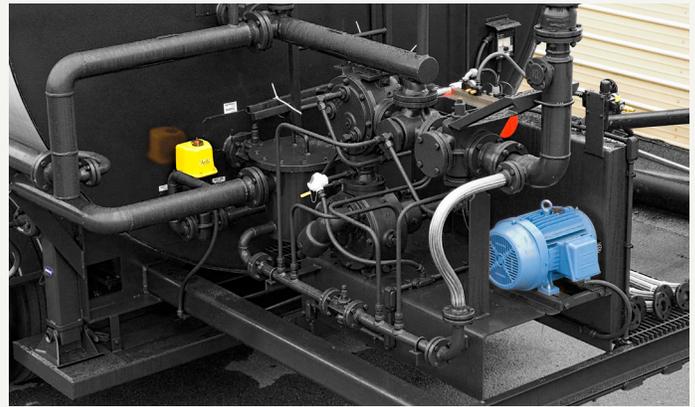
A 2,000 gallon additive tank can be built onto the rear of the main tank, overhanging the pump system. It is heated and insulated.

Fuel tank option

A 400–650-gallon compartment can be built into the gooseneck of the chassis for storage of No.2 fuel for the burner.

Chassis options

Budd wheels, spring suspension and either single, tandem or triple axles are optional. Quad axles and air bag suspension are also available.

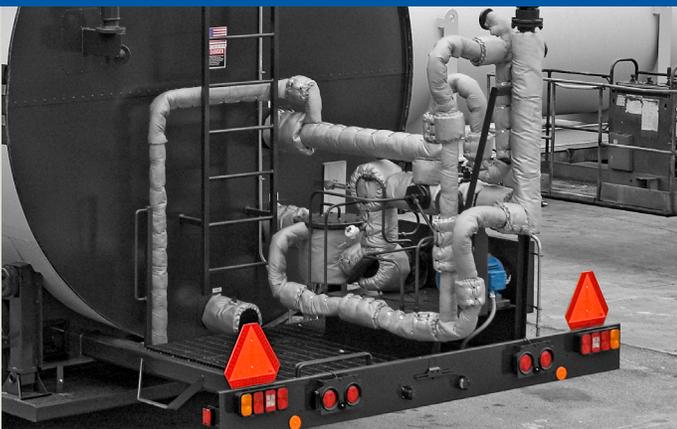


Metering package option

The optional metering system uses two positive displacement pumps. One is an AC supply pump, the other a metering pump. The metering pump responds only to the actual flow of AC and is much more reliable than systems that merely sense rotations of the supply pump. The system corrects flow rate to allow for temperature variations. Mass-flow type meters are also available.

Foundation option

Optional steel plate foundations with hand cranks make set-up easy. They can be cranked down in minutes, drastically reducing set-up time and eliminating the need for cribbing.



INSULATED PIPING



FUEL PREHEATER

Hot oil heater

The standard hot oil heater for Heli-Tank units is a Heatec HCS-100. Other models are optional. The heater can be used to heat another coil tank, an asphalt metering package and liquid asphalt lines. When furnished with an optional manifold and auxiliary pump, the heater can also heat silo cones, traverse conveyor, and a drag conveyor.

The heater has a highly efficient helical coil. Coils are built to ASME standards and can be code-stamped as an option. Coil has a 5-year warranty for HC-series heaters (3 yr. for HCS). Coils are stitch-welded to eliminate gaps between the turns so heated gases can't short-circuit and waste energy. Optional STACKPACK™ economizers further increase heater efficiency.

Heaters include insulated heat chamber, centrifugal pump and expansion tank. A low-maintenance burner and controls are also included. Standard burners use No. 2 fuel oil. Optional burners are available for natural gas or combination gas/oil.



Heli-Tank fitted with a hot oil heater and optional STACKPACK™ economizer to lower fuel consumption.

Hot Oil Heaters

	MODEL	OUTPUT BTU/HR	FUEL USAGE		RECIRCULATION PUMP (GPM)	EXPANSION TANK (GALLONS)
			NO. 2 GPH	GAS CFH		
SINGLE-CIRCUIT	HCS-70	700,000	6	910	100	100
	HCS-100	1,200,000	10	1,560	100	175
	HCS-175	2,000,000	17	2,600	150	280
MULTI-CIRCUIT	HC-120	1,200,000	10	1,560	100	175
	HC-200	2,000,000	17	2,600	150	280



CALIBRATION TANK



UNLOADING PUMP

WELBILT™

HORIZONTAL TANKS

Astec Welbilt tanks are horizontal storage tanks that include heating coils for hot oil.

They are normally used to heat and store liquid AC, but can be used for other materials, such as heavy fuel oil. They come in seven different sizes with capacities from 10,000 to 40,000 gallons. Numerous options are available.

Portable models have a chassis for highway travel similar to the chassis of the Heli-Tank. Stationary models have saddles that rest on foundations or on the ground.





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WELBILT™

HORIZONTAL TANKS

Standard skin is painted aluminum. Natural embossed aluminum or other color finishes are optional. An 18-inch wide area along the top of the tank is reinforced to allow workers to walk on it without damaging the skin. End wall skins are made of steel for extra ruggedness.

Special features

Welbilt tanks have the same type of overflow protection described earlier for our vertical tanks.

A manway is located in the top of each compartment. An access ladder is provided on the outside of the tank and inside each compartment. Each compartment also has a combination vent and overflow pipe. A 3-inch plug valve in the bottom of each compartment allows it to be completely drained, which is necessary when polymer asphalts are used.

Temperature controls

Temperature controls are the same as those described for vertical tanks.

Tank options

Internal bulkheads are optional. They divide the tank into compartments, which can be used for different ACs, heavy

fuel and additives. Bulkheads are double-walled, insulated and can be placed to divide the tank into a variety of sizes. Various combinations of heating coils and controls can be furnished.

Heater option

The tanks are compatible with virtually any hot oil heater, such as the Heatec HC/HCS series. As an option, one of these heaters can be installed on an extension to the tank.

Unloading pump option

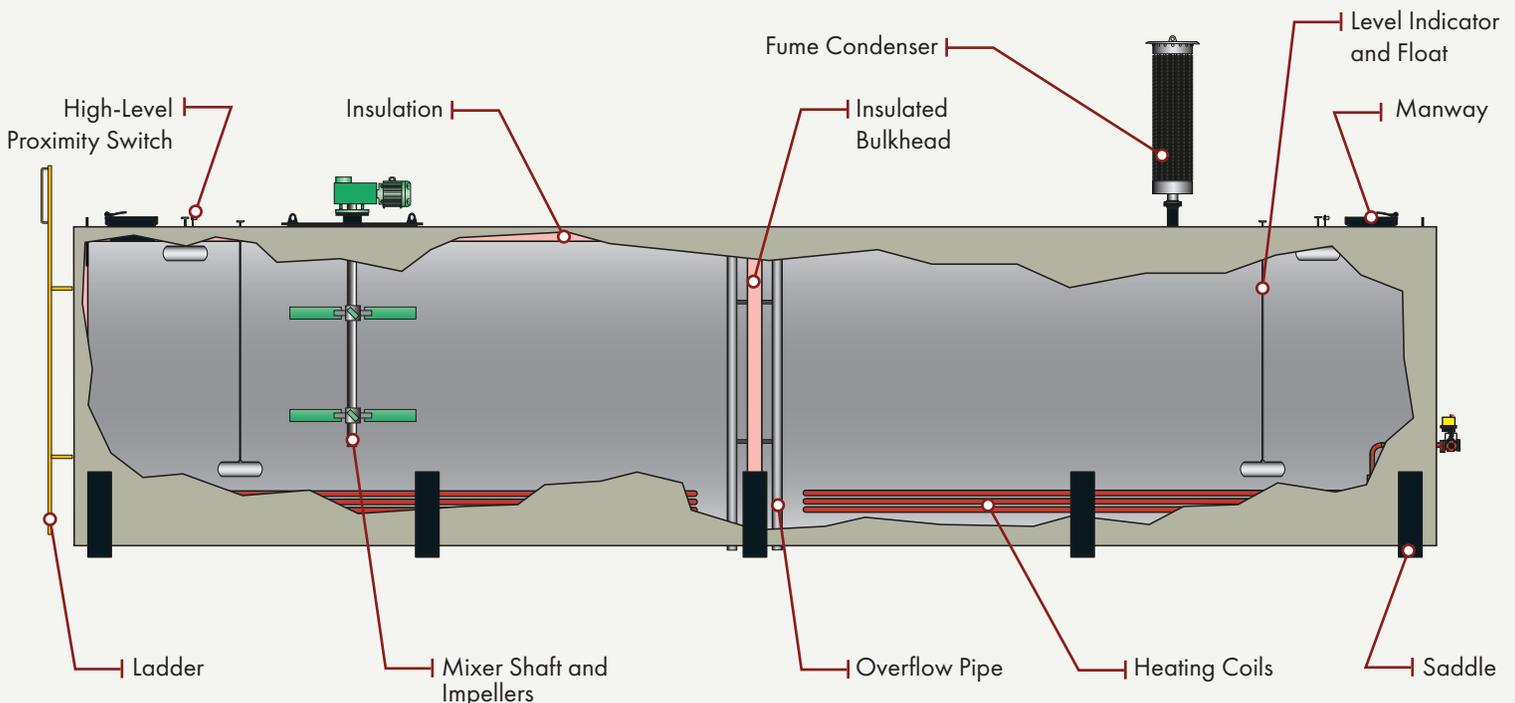
An optional pump, motor, and strainer system unloads AC tankers. The system can be piped so it also unloads the tank.

Mixer options

Mixers for PMAC similar to those used in vertical tanks can be factory-installed in new tanks. We recommend the arrangement shown in the drawing at the right.

Other options

Other options include radar level gauge boards, chart recorders, ball-joint piping (for relocatable plants), high-low AC level alarm, fume condensers, air-operated valves, and more.



Key Characteristics of Stationary Welbilt Tanks

MODEL	CAPACITY (GAL)	HEATING SURFACE SQ. FT.	COIL CAPACITY (GAL)	LENGTH	HEIGHT FT.	WIDTH FT.	WEIGHT LBS
TA-10	10,000	231	65	18' 4"	11' 11"	11' 1½"	10,960
TA-15	15,000	380	107	26' 4"	11' 11"	11' 1½"	14,931
TA-20	20,000	329	148	34' 4"	11' 11"	11' 1½"	18,894
TA-25	25,000	679	190	42' 4"	11' 11"	11' 1½"	22,912
TA-30	30,000	828	232	50' 4"	11' 11"	11' 1½"	26,625
TA-35	35,000	977	274	58' 4"	11' 11"	11' 1½"	31,160
TA-40	40,000	1126	316	66' 4"	11' 11"	11' 6½"	35,200

Capacities shown are nominal capacities.

Key Characteristics of Portable Welbilt Tanks

MODEL	CAPACITY (GAL)	HEATING SURFACE SQ. FT.	COIL CAPACITY (GAL)	LENGTH	HEIGHT FT.	WIDTH FT.	WEIGHT LBS
TA-10P	10,000	231	65	27' 1"	14' 3"	11' 1½"	15,100
TA-15P	15,000	380	107	37' 1"	14' 3"	11' 1½"	29,600
TA-20P	20,000	329	148	46' 1"	14' 3"	11' 1½"	34,600
TA-25P	25,000	679	190	53' 6"	14' 3"	11' 1½"	44,600
TA-30P	30,000	828	232	58' 1"	14' 3"	11' 1½"	52,950
TA-35P	35,000	977	274	70' 3"	14' 3"	11' 1½"	71,250

Capacities shown are nominal capacities.

PARTS AND SERVICE

We back our products with 24/7 support from our in-house parts and service teams. Our engineers and sales staff are available for project consultation, and our factory-trained service technicians can install and setup your new Astec equipment for you.



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