

You can also reduce your cost by buying coal earlier in the year, perhaps the previous winter or spring. You prepay at the current price, not at the price at the time your order will be delivered. At least try to arrange for your next season's supply to be delivered later. If not, purchasing coal at the current price and having it delivered early still saves you money because you're going to need the coal anyway.

Don't stop here. In addition to the current price, ask for a reduction if you prepay for a larger supply, say 4 to 6 tons. This provides the dealer with capital for current expenses. Since it is an advantage to him, ask for an advantage for you in return.

Make clear, too, whether the cost per ton is the total charge. If there is a delivery charge, know about it beforehand; such a charge may be a bargaining factor. Coal dealers do not normally have a thick network of customers in nearby areas. They have to travel, sometimes up to seventy miles, for customers. Ask if a mileage charge is added to the delivery charge and basic cost per ton. This charge could be as much as a dollar a mile and must be considered in your decision of where to buy coal, as well as how much to buy at a time. Eliminate the mileage charges for four small deliveries by ordering one large delivery. A mileage charge may also be a bargaining point.

### Coal Co-ops

At present the price is right for a ton of coal in comparison to other fuels. In the future the price may be dealer-inflated far beyond what some consumers consider a reasonable profit. Here's an example from the past that might be an example for the future.

In 1921 the people of Lehighton, Pennsylvania, got so angry at the high prices and bad quality of coal that they formed a cooperative. The coal companies wouldn't sell directly to the consumers for the latter to cut their costs, and the companies thought they had the people over a bin, so to speak. The people organized, searched for a tottering coal company that needed customers, and found one. Then by financing the

co-op with personal notes and volunteer labor, they bought a train freight car for shipping the coal, land for storing the coal, a portable elevator to lift the coal, and sand and cement to build the large bins near the railroad siding.

At the time, dealers sold 2,000 pounds to the ton; the co-op sold the 2,200-pound long ton. Dealers made \$4 a ton profit; the co-op lowered its price \$3 and shoveled in free the extra 200 pounds of the long ton. Dealers sold a mixture of slate, dirt, and coal; the co-op sold only high-quality coal. By the end of the year the co-op sold 97 carloads (4,200 tons) of coal and paid off all its debts except one-third of the value of a new coal truck. The co-op saved the town residents \$14,000 that year by reducing the price and offering a long ton.

If past is prologue, then people who burn coal have an example on which to base future coal co-ops.

## Coal Bins

A coal delivery truck is designed with hydraulic lifts under the bed of the truck so that the coal is raised and tilted backwards. The coal slides by gravity through a chute out of the truck. Where the coal lands is up to you.

Strictly speaking, coal bins aren't absolutely necessary. Coal doesn't have to be seasoned like wood and therefore does not need a shed or shelter. Leaving the coal outdoors is acceptable. Rain or snow won't alter the burning properties of coal; it will merely interfere with getting to the coal. If worse comes to worse, a pile of coal may be dumped anywhere. A tarp or heavy-duty plastic weighted down by rocks or pipes keeps the snow and ice off.

If you decide to leave the coal outside, certain considerations make it easier to manage later on. Digging a hole, putting the coal in it, and sliding a cover over the top may keep the coal out of sight and the weather. When you want to dig the last level out of the hole, however, you have to step into the hole and heft the coal hod up and out.

A better way to store coal is in a bin close to your basement or back door. This makes it easy to fetch the coal in inclement weather. Be sure to locate the bin within easy access of a



**A coal delivery truck like this slides the coal down a chute, through a cellar window, and into a bin. This truck can carry about four and a half tons.**

delivery truck, preferably at a site that won't require the driver to gouge the front and back wheels into your lawn or vegetable garden.

The bin itself is only a container. It may be crude or elegant, depending on the amount of expense and labor you wish to put into it. At a minimum, a bin may be some cheap plywood and posts to provide sides and a cover for the coal. If you wish to elaborate, you can use pipes, 2 by 4s, textured plywood, a hinged top, and paint it to match your house.

For that matter, you can have the coal dumped and later shovel it into galvanized metal trash barrels. This way, one of the barrels may be kept unobtrusively by the back porch while the others may be stored elsewhere out of sight until more coal is needed.

The main consideration is to place your bin inside or outside your house at a place that is accessible to the coal truck. If you want the bin inside the house so you never have to go outside for the coal, be sure to install it near a cellar window or door. When the truck arrives, open the window. The driver will angle the chute through the window and the coal will slide straight into the bin.

Keep in mind that the weather may change between the time you build a bin and the time the coal is delivered. A cellar window in summer may be free and clear. In winter it may be packed under snow and ice. Also, the back section of your driveway may be impassable in winter and the truck may not be able to get back there.

A stoker in the cellar must have the coal bin adjacent to the furnace. Plan easy access of the truck to the bin, or later you'll have to shovel the coal from your driveway into the bin so the stoker can worm-gear the fuel directly into the furnace.

You can build a permanent coal bin in your basement with relatively little trouble. The best way is to completely enclose the coal from floor to ceiling. This way, when the coal is delivered no dust floats loose. Also you won't be able to see the coal. The bin will appear almost like a separate storage room.

To save building materials, plan to construct the bin in a corner so that you can use two of the basement walls for two

of your bin walls. You must, however, remember one critical point—have a delivery window within the confines of the bin.

Plan your bin so that all the coal is gravity-fed to a small opening on the bottom where you can shovel it into a scuttle. This way you will never have to enter the bin, collect dust on your shoes, tramp it upstairs. To do this, angle the bin flooring about 3 feet high at each far end of three sides down toward the opening for the shovel. This forms, in effect, a large three-sided scoop. Then the coal will slide continually toward the opening by a natural gravity feed. The shovel hole can be about 2 feet square. Above this construct a door that doubles as both a shallow storage area for shovel and broom and the bin entrance. This door should open fully in case you need to enter the bin for some reason. Such an overall design closets the coal while at the same time allowing easy, dust-free access to it without needing to be raked forward or forcing you to tromp through it.

A related but easier design to build is this. Inside the bin, angle the flooring from only the backside below the window toward the shovel door instead of three sides. Then across the entire shovel-door side, construct three or four hinged-door accesses to the gravity-fed coal. When you need coal, simply lift up one of the doors, shovel the scuttle full, and close the door.

The following figures give an estimate of the basic capacities and construction needs of a completely enclosed coal bin. The dimensions imply a basement ceiling at least 7 feet high.

### Gravity-Fed Enclosed Coal Bin

Capacity (tons)	3½	5	6½	8	9½
Dimensions (inside feet)	5 × 5	6 × 6	7 × 7	8 × 8	9 × 9
Labor (hours)	8	8	12	12	12
Ceiling board (square feet)	25	36	49	64	81
Plywood/fiberboard (square feet)	106	124	170	200	232

## 114 / Home Heating with Coal

### Lumber

(board feet)	90	100	160	200	250
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In any case, the size of a bin rests on how many tons you want to order and store at one time. A ton takes about 40 cubic feet. In linear terms, that's 3 by 4 by 4 feet with room to spare. It's a relatively small space. In case your supplier doesn't always deliver exactly what you order, which is likely to happen, be accommodating and build a bin allowing 50 cubic feet to the ton.

### Figuring the Coal in a Bin

Homeowners are not likely to have heavy-duty scales under their coal bins to calculate exactly how much coal is delivered or how much is left after burning a portion. You can figure roughly how much coal is left in a bin by a few simple measurements and calculations.

First, determine the weight of a cubic foot of coal. Taking into account the slight variations of coal qualities among producers, the following table lists average weights and volumes.

<i>Size of Coal</i>	<i>Pounds per Cubic Foot</i>	<i>Cubic Feet per Ton</i>
Broken	56.85	35.18
Egg	57.74	34.63
Stove	58.15	34.39
Nut	58.26	34.32
Pea	53.18	37.60
Buckwheat	54.04	37.01

Differences among the sizes of coal are small enough to give you an approximate estimate within your bin. To determine how much coal you have left in your bin, multiply the number of cubic feet the coal occupies in the bin by the weight of a cubic foot of coal. Divide this figure by 2,000.

For example, if your bin of pea coal measures 5 by 5 by 5

feet, full of coal it would hold 125 cubic feet. Now spread your coal evenly within the bin and measure how deep it is. Say, for example, it measures 3 feet deep. Now to find the cubic feet of the remaining coal, multiply 5 times 5 times 3. This would be 75 cubic feet of coal. By the above listing, pea coal weighs approximately 53 pounds per cubic foot. Multiply 53 pounds per cubic foot by the 75 cubic feet of remaining pea coal. This equals 3,975 pounds. Divide this by the 2,000 pounds in a short ton. What results is the figure of how much coal remains in your bin—1.99 tons.

### Spontaneous Combustion

Old rumors about the dangers of spontaneous combustion of stored coal may reach some modern home owners. If your coal catches fire, it isn't due to spontaneous combustion.

Unless you have a coal bin with a gargantuan mountain of coal that only a medieval castle baron could possibly use, your house will not burn down because your stored coal caught fire without a match. Even at that, only bituminous stored in great quantities at power plants has this reputation. Anthracite never bursts into spontaneous combustion.

When large stockpiles of bituminous are stored, they absorb oxygen. The absorption develops increasing heat, which in turn increases the potential for absorbing more oxygen. A competition developed between the oxygen absorption and the circulation of air through the coal pile raises the temperature. Ignition of the coal may occur only very deep within a pile away from the relatively low temperature of the external air.

In other words, if you have a high, wide pile of bituminous reaching over your second story roof, you run the risk of spontaneous combustion. Otherwise, cast aside these fears. Remember that coal requires a temperature of about 660° F. to ignite. The temperature in any household supply of coal should be low enough to eliminate such a possibility.

To be absolutely sure, any coal bin under 12 feet high with a base of 10 to 12 feet has been calculated safe and home free.

## **Ash Cans**

If you need to store your ashes for a relatively long time and wish to keep them out of sight, build a storage box. First, choose the size of metal cans you plan to use for the ashes. Buckets are easier to handle than barrels. One cubic foot of anthracite ash weighs 25 to 45 pounds, depending on the inherent percentage of ash in the coal. (A ton of anthracite has a volume of 9 to 12 cubic feet or 7 to 9 bushels.)

Next, build a rectangular box that completely covers the cans. The secret for easy handling of the cans is to hinge both the top of the storage box at the back and the front panel at the bottom. This way the cans don't have to be lifted up and over the front panel to place them down into the box. They can instead be slid into the box without the teeth-grashing disaster of knocking the can on the box and spilling the ashes.