



charcoal making



what is it?

It's all about burning wood whilst controlling the amount of oxygen present. Very little oxygen is allowed in, and the slow burn results in a product (charcoal) that burns at very high temperatures, but produces very little (if any) smoke. Charcoal is one of the oldest commodities in the world. It provided the heat to smelt metals like iron and copper - so without it, the bronze age, iron age and industrial revolution wouldn't have been possible. Nowadays, charcoal is produced in metal kilns, but originally it was made in earth clamps by piling up wood, covering it with turf to control the ingress of oxygen, and burning it slowly. Coppicing was the usual way to provide wood for producing charcoal in a perpetually recurring cycle - but alas, as with most resources, it was over-exploited and resulted in massive deforestation in Europe and North America. Charcoal has traditionally been used for blacksmiths' forges; for drawing; as an ingredient in gunpowder; as a soil additive; for filtration; and for cooking. Nowadays most charcoal is used for barbecues. Charcoal briquettes are made by compressing charcoal made from sawdust etc, along with dust and a binder; lump charcoal is just the raw product from burning hardwoods.

what are the benefits?

- provides a market for poor-quality wood, although there's more demand now for firewood, due to the recent increase in the use of wood stoves
- buying locally-produced charcoal reduces the transport involved with imported charcoal, provides local employment and supports the local economy
- helps manage woodlands; woods need to be thinned to produce a wide range of products, including timber, firewood and charcoal



Freshly-made charcoal.



Three kilns during a burn.

- locally-produced charcoal is a renewable, sustainable resource because the carbon released on burning is balanced by the carbon taken up by growing trees, and so cooking over charcoal saves on non-renewable fossil fuels

what can I do?

Getting started: you can make charcoal for your own use, and there are a small but growing number of people doing it commercially. It's difficult to make a living from charcoal burning alone, but it could work as part of a woodland business like tree surgery, forestry contracting, timber products, courses, firewood etc. The biggest market is for barbecue charcoal (and there are a few specialist suppliers of artists' charcoal).

More people are buying small woodlands, or you could negotiate the use of someone else's wood. Ask the Forestry Commission, the Woodland Trust, agents for large estates, or people you know with woodland. You may be able to produce charcoal there for free. However, the firewood market has taken off recently, so you may have to pay for the wood, even if you can put your kiln on the land for free. You could pay a forestry contractor to deliver timber to your kiln. Arborists working on street or garden trees often have a lot of cut crown wood that they may have to pay to get rid of (local authorities sometimes charge £15-20 per load of waste wood, and convert it into woodchip and compost). They may be happy to deliver it to you for free.

Start by attending a course to see how it's done and to have a go. Then buy a kiln, or if you only want a small one, you could convert a 205-litre oil drum. There's an explanation of how to do this in *Coppicing and Coppice Crafts* by Rebecca Oaks

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and Edward Mills. But you have to learn the art of charcoal burning by actually doing it. It's a scientific process, but there are so many variables, that it really does become an imprecise art. Variables include:

- species of wood used
- moisture content of the wood
- how wet the ground is and whether it's free-draining or not (clay soils can be problematic, as a huge amount of water is driven off during the burn, and it has to go somewhere)
- the wind can inject unwanted oxygen; you can put hurdles around the kiln, although this is more of a problem on open land than in enclosed woodland
- the time of year
- how much oxygen you let into the burn
- the skills of the charcoal burner

Regulations & other people: talk to your local planning dept. first. You don't need planning permission to site your kiln, as it will be temporary, but the local authority won't like it if local residents complain about smoke in their house or garden. It pays not to get in their bad books.

Before the burn gets up to operating temperature, there are usually huge clouds of smoke, and someone might call the fire brigade. You must tell the local fire brigade HQ that you are intending to start a controlled burn. Tell them when you've closed it down too. Plus it's polite to tell any neighbours who might be affected by the smoke.



Lifting the charcoal out of the kiln with a fork.

You need insurance before starting. If you have insurance for your business or woodland, then you can add charcoal burning to it.

Managing the burn: there are usually 4 inlet ports (at ground level) and 4 outlet pipes on a kiln. Typically, pipes (or chimneys) are 13cm diameter. The inlet ports are to control the oxygen input, by covering or partially covering the end of the inlet with a house brick or soil. A burn with a 2m diameter ring kiln, approx. 1m high could take around 10 hours, depending on the variables above. Ideally, wood should be up to 10-13cm diameter, or up to 8cm for a small kiln / oil drum. The burn should be managed - never leave a lit kiln, and stay with it for at least an hour after the burn has finished. The whole process from start to finish can take 3-4 days. On day 1, fill the kiln. Start day 2 early - light the kiln around 5-6am, and be prepared to come home around 12 hours later. It's best to leave the kiln for 24 hours to cool, so perhaps on day 4, lift the lid and carefully extract the charcoal. Use an asphalt / tarmac fork, or a potato fork - one with a good curve and lots of prongs. The charcoal needs to be graded and bagged. Grading can be done on a sloping chute of 17mm mesh (sold in rolls from pet supply shops). Grading allows small pieces and dust to fall through the holes - dust in the charcoal prevents it from burning well. It can then be tipped into sacks that can be carried easily.

Kilns can be taken away, or left in the woods. If it's a mini-kiln, everything can be taken away in the back of an estate car. You can get the next load of wood delivered to your kiln, or you can roll the kiln to where the wood is stacked.

resources

- see lowimpact.org/charcoal-making for info, advice, equipment, courses & books, including:
- FAO, *Simple Technologies for Charcoal Making*
- D W Kelley, *Charcoal & Charcoal Burning*
- James Bruges, *the Biochar Debate*
- bit.ly/3g6CqNW – listing of local charcoal producers
- woodsmithstore.co.uk - buy charcoal kilns
- bit.ly/2OTVYZW – how to make your own charcoal in an oil drum
- practicalaction.org/charcoal-production – small-scale charcoal production handbook
- regia.org/charcoal.htm – charcoal burning in Anglo-Saxon England

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