



How Various Tinders Burn

Here we look at different natural materials found in a variety of landscapes that can be interchanged and used to make great tinder bundles to carry a spark into a hearty bundle of flame ready to ignite denser materials of twigs and sticks to build the heart of your fire. In all cases, the dryer the materials, the more effective they will be.

A Tinder Bundle often has 3-4 layers for example:

First tinders: A coal extender such as char cloth or king alfreds cake
Some fluff
Medium fibrous material such as processed inner bark
Coarser fibrous material such as bracken

First tinders to catch the spark

These are typically fungi in their natural foraged form. However, perhaps most commonly used nowadays is charcloth.

Here we introduce and give tips on preparing and processing:

- King Alfred's cakes *Daldinia concentrica* - a fungus growing on old or decaying Ash trees. This fungus works well when it has been well dried out and is even more effective at catching a spark or igniting from an ember if you process it as you would charcoal or charcloth.
- Ganoderma fungus *Ganoderma applanatum* - a bracket fungus with a white underside, brown above, growing at the base and lower areas of trees including Oak and Beech. The layer just underneath the hard upper surface is used to catch sparks, it works most effectively if grated or sawn to create small fibres with massive surface area to volume ratio - this is especially important for catching smaller, cooler sparks.
- Horse Hoof Fungus *Fomes fomentarius* - bracket fungus that is found growing on birch and beech trees. The layer just underneath the hard upper surface is used to catch sparks and can be used to transport an ember from one site to another, smouldering slowly for over an hour depending on the size of the fungus.
- Charcloth - there's another video showing how to make charcloth out of 100% cotton cloth in a tin over a fire. This is a really effective first tinder for catching larger sparks from flint and iron striker or modern steel and strikers.

Fluffy Fine Fibrous Material

Here we introduce and give tips on preparing and processing:

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- **Cedar** (*Thuja*) bark - processed until it is really fine and fluffy. This can be done by scraping small fibres off the inner bark with a rock or knife.
- Fireweed (Rosebay Willowherb) *Chamerion angustifolium* - white fluffy seeds often found along old railway lines and waysides.
- Reed mace seeds *Typha latifolia* - fine fluffy seed heads (sausages on a stick) found along waterways and in ponds
- Old Man's Beard *Clematis vitalba* - also known as traveller's joy. This fluffy seed is another one that is effective to nurture a delicate ember into a stronger heat source.
- Sphagnum Mosses (at least 10 species in the UK) - often growing in and around bogs, these sponge-like mosses can soak up more than 8 times their own weight in water. They are excellent at helping the delicate initial heat source to smoulder and grow. You can also make a good tinder bundle purely out of sphagnum moss to take it all the way into flame.

Medium Fibrous Materials

- Processed fibrous inner barks (ones that work well for making cordage will also work well as tinder). You can process them by roughing them up in your hands or scraping off the outer bark with a stone or knife. The main principle here is you want to separate the layers and fibres to increase the surface area as well as making them more flexible to nestle nicely in your tinder bundle.
- Fine, flammable outer bark - birch. We've lost count of the number of times having some birch bark has helped tip the balance to our fires lighting successfully... Especially in damp conditions, birch bark is such an asset! It has very flammable oils in the bark that light even if damp and they flame for longer than you might guess from the size / weight of the material.

Coarser Fibrous Materials for the Outer Layer

- Bracken - watch out for cuts when gathering, best to do very attentively snapping the dry fronds rather than pulling along the stems or wear gloves as you can get cuts akin to paper cuts from the stems. Dry bracken is really effective as a coarse tinder, it holds together well, ignites well and burns for a good length of time.
- Cleavers - when you find cleavers growing up a fence or gate, it can be easy to gather, especially in winter when other coarser materials may be too brittle and past their best. It is a fantastic coarser tinder once dry. It holds together well, ignites well from a flame or good initial heat source and burns for a good length of time.
- Grass leaves - here we show the Purple Moor Grass leaves which are quick and easy to gather. Whilst they provide a good outer nest, they do burn up quickly and so could be considered medium fibrous materials with something like bracken or cleavers surrounding them.
- Grasses - often what first appear as dry grasses can actually be still alive with water inside. The round stems have a waxy cuticle layer on the outside that is effective at retaining moisture so they stay moist for quite some time even after they've been cut as hay. They do work as an outer layer of a tinder bundle if they've been dried well but if grass leaves or another fibrous material is available, grass stems aren't our favourite.

The waxy layer also means that even if the grasses are really dry, they will smoke more than other materials when they are lighting.

Summary

Remember, all the tinders we've shown here work well so long as they are dry. Dry plant materials with a high surface area to volume ratio, with nest-like material on the outside and progressively finer materials toward the centre is the key principle. Take this principle and experiment - as I demonstrate, even dryish dead leaves work even though they aren't the easiest to hold together and a bit smokey... Equally, if you just have coarser materials that are really dry, such as bracken, they can work effectively with a large and robust enough heat source such as a generous sized piece of lit charcloth.

Note: due to the quality of the materials having a large surface area to be effective tinders, this also means they are prone to absorbing moisture quickly when in damp environments. It's therefore worth considering how you will keep your tinders dry, for example by keeping them in plastic boxes or bags, leather pouches or tins.

Ages

All ages

Here are a few suggested associated activities

- Gathering a variety of tinders with your group for lighting the group's fire, noticing and discussing the differences and how effective each one is
- Having tinder available for participants to learn to prepare as a tinder bundle, catch a spark and blow into flame
- Tinder bundle rumble - this is a great challenge for participants who are more experienced in fire lighting and tinder bundles. Set it up at the start of a day that you might say tinder bundle rumble at any time. If they hear this, they need to (individually or in pairs) gather any tinder they can find in the surrounding area, form a tinder bundle and try to ignite it. Depending on your environment and the skill level of the group, this can be time limited (suggested time of 10-15minutes) and you can offer different forms of initial heat source. It could be that once they've formed their tinder bundle they can then take a small ember from an existing fire to try and ignite it with. Alternatively, you can have a striker and charcloth or older forms of ignition available for them to use.
- Younger children also really enjoy making nests and clay eggs, this links really well with the Redstart story and witnessing fire lighting but leaving them with something to take home with them. They will still be developing skills that will later help them form tinder bundles.

Invisible Learning

- How to nurture something delicate into life
- Attentiveness
- Principles of the need to grade material for fire

Hazards to Highlight

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- Burns
- Catching hair (or eyelashes!) alight

Risk Assessment Considerations

These are the risk assessment consideration documents to be referred to for this activity.

- Fire related activities
- Site risk assessment (specific to your site)

Links

- Nests and Eggs
- The Story of the Gift of Fire
- From Flame to Log
- Fire by Percussion: Iron Age Flint and Steel, Flint and Iron Pyrites, Steel and Striker
- Fire by Friction: Hand drill and Bow drill
- Winter Fire Lighting Tips

Tags

- Fire, ignition, tinder, fire triangle, fuel, bracken, grass, purple moor grass, cleavers, sticky weed, cedar, inner bark, chestnut, reedmace, fireweed, old man's beard, sphagnum moss, King Alfred's cake, ganoderma fungus, horse hoof fungus,