

Fire-starting - Equipment list and hazard management guide

Equipment and materials	Quantities per group
Part A - Hand drill	
<p>Base board: DAR pine – 140 mm x 19 mm x 200 mm. With two adjacent 6 mm holes positioned 20 mm from the top edge and 20 mm from the side edge at one end.</p> <ul style="list-style-type: none"> Available from Bunnings (LINK) as of March 2026. They are also able to cut into 200 mm sections for you. 	1
<p>Drill stick: <i>Eucalyptus grandis</i> - flooded gum (dowel) 800 mm in length and 12 mm in diameter. Taper end manually with sandpaper.</p> <ul style="list-style-type: none"> Available from Bunnings (LINK) as of March 2026. Bunnings can cut into 800 mm sections. 	1
<p>Hearth board: Tasmanian Oak – 30 mm x 12 x 1200 mm. With 13 mm deep starter holes/notches across the wooden board. Board needs to have drill holes that align with the base plate (two adjacent 6 mm holes positioned 10 mm from the top edge and 10 mm from the side edge at one end).</p> <ul style="list-style-type: none"> Available from Bunnings (LINK) as of March 2026. Bunnings can cut into 1200 mm sections. 	1
G-clamp	1
Timers/stopwatch	1
Safety glasses	1 per person
Bolt and wing nut (bolt length 80 mm)	2
Sandpaper	1
Optional: Temperature measurement device	1
Optional: Electric hand drill	1
Part B - Fire saw	
<p>Base plate: Dress pine - 140 mm x 19 mm x 200 mm. With two adjacent 6 mm holes positioned 20 mm from the top edge and 20 mm from the side edge at one end.</p> <ul style="list-style-type: none"> Available from Bunnings (LINK) as of March 2026. They are also able to cut into 200 mm sections for you. 	1

<p>Hearth stick: Tasmanian Oak – 30 mm x 12 x 1200 mm. With 13 mm deep starter holes/notches across the wooden board. Board needs to have drill holes that align with the base plate (two adjacent 6 mm holes positioned 10 mm from the top edge and 10 mm from the side edge at one end).</p> <ul style="list-style-type: none"> Available from Bunnings (LINK) as of March 2026. Bunnings can cut into 1200 mm sections. 	1
<p>Saw stick: Tasmanian Oak – 400 mm in length and 6x6 mm in diameter.</p> <ul style="list-style-type: none"> Available from Bunnings (LINK) as of March 2026. They are also able to cut into 400 mm sections for you. 	1
G-clamp	1
Timers/stopwatch	1
Gloves (gardening)	2 pairs
Safety glasses	1 per person
Bolt and wing nut (bolt length 80 mm)	2
Optional: Temperature measurement device	1
Optional: additional materials	
<p>Hand drill - Tinder options:</p> <ul style="list-style-type: none"> Dry grass Coconut fibre Dry leaves from <i>eucalyptus spp.</i> (sometimes pounded into a powder) Dry head of the flower stalk of a grass tree (<i>xanthorrhoea spp.</i>) Dried kangaroo dung. 	Small quantity for each group to place in hearth notch
<p>Hand drill – Additional drill options:</p> <ul style="list-style-type: none"> Hoop pine dowel: 12.5 mm diameter, 100 mm length (tapered end) Silky oak: 12 mm diameter, 100 mm length (tapered end) Spotted gum: 12.5 mm diameter, 100 mm length (tapered end) Red cedar: 12.5 mm diameter, 100 mm length (tapered end) – note: red cedar is not commercially farmed in Australia. Do not substitute with American red cedar. 	One per group
<p>Hand drill – Additional hearth options (all hearths are to have 13 mm starter holes for drill stick to sit in):</p> <ul style="list-style-type: none"> Hoop pine: 40 mm x 18 mm x 1200 mm Silky oak: 40 mm x 18 mm x 1200 mm Spotted gum: 40 mm x 18 mm x 1200 mm Red cedar: 40 mm x 18 mm x 1200 mm Tasmanian oak: 40 mm x 18 mm x 1200 mm 	One per group

Hazard management

Hazards	Control measures
<p>Fire:</p> <ul style="list-style-type: none"> • burns • flammable materials can catch on fire • uncontrolled fire. 	<ul style="list-style-type: none"> • Wear appropriate PPE: lab coat, gardening gloves, safety glasses. • Check and adhere to fire ratings in the area. • Clear the area. • Have fire bucket, extinguisher and fire blanket ready.
Sawdust could fly into eyes	<ul style="list-style-type: none"> • Wear safety glasses.
<p>Wooden hearth boards, sticks, and saws:</p> <ul style="list-style-type: none"> • splinters and/or blisters, cuts or scrapes. 	<ul style="list-style-type: none"> • Wear gloves (gardening).
<p>Smoke inhalation:</p> <ul style="list-style-type: none"> • students get too close while generating the ember. 	<ul style="list-style-type: none"> • Warn students to stand back when actively attempting to start fire. • Students with respiratory conditions e.g. asthma need to be careful or wear masks. • Accumulation of smoke: turn on fans and open windows and doors after the experiment to increase ventilation. • Attempt experiment outside if possible or conduct experiment away from smoke alarms.
<p>Muscle strain:</p> <ul style="list-style-type: none"> • in wrists or arms from prolonged or incorrect fire-starting technique. 	<ul style="list-style-type: none"> • Teach students how to use proper technique. • Get students to swap over frequently so they aren't in this position for prolonged periods.
<p>Electric drill:</p> <ul style="list-style-type: none"> • electric shock • entanglement of hair or other items • cuts or wounds for rotating drill bit • flying debris • trip hazard (if drill has power cord). 	<ul style="list-style-type: none"> • Teach students proper electric drill handling technique and hazard awareness. • Follow proper PPE – safety glass, tie hair back, lab coat, gardening gloves. • Ensure electrical safety and awareness from students. • Use a cordless drill if possible.
	<ul style="list-style-type: none"> •

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Monitoring and review (to be completed during and/or after the activity)	Yes	No
Have additional hazards been identified?	<input type="checkbox"/>	<input type="checkbox"/>
Were the control measures effective?	<input type="checkbox"/>	<input type="checkbox"/>
Are further or different actions required?	<input type="checkbox"/>	<input type="checkbox"/>
Details:		