Fire-starting - equipment list and hazard management guide

Equipment and materials	Quantities per group
Part A – Hand drill	
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. • *Available from Bunnings (LINK) as of March 2026. They are also able to cut into 200 mm sections for you.*	1
Drill stick: *Eucalyptus grandis* - flooded gum (dowel) 800 mm in length and 12 mm in diameter. Taper end manually with sandpaper. • *Available from Bunnings (LINK) as of March 2026. Bunnings can cut into 800 mm sections.*	1
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). • *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	
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. • *Available from Bunnings (LINK) as of March 2026. They are also able to cut into 200 mm sections for you.*	1

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). • *Available from Bunnings (LINK) as of March 2026. Bunnings can cut into 1200 mm sections.*	1
Saw stick: Tasmanian Oak – 400 mm in length and 30 x 12mm mm in diameter. • *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	
Hand drill - Tinder options: • Dry grass • Coconut fibre • Dry leaves from *eucalyptus spp*. (sometimes pounded into a powder) • Dry head of the flower stalk of a grass tree (*xanthorrhoea spp.*) • Dried kangaroo dung.	Small quantity for each group to place in hearth notch
Hand drill – Additional drill options: • 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
Hand drill – Additional hearth options (all hearths are to have 13 mm starter holes for drill stick to sit in): • 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
Fire: • burns • flammable materials can catch on fire • uncontrolled fire.	• 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	• Wear safety glasses.
Wooden hearth boards, sticks, and saws: • splinters and/or blisters, cuts or scrapes.	• Wear gloves (gardening).
Smoke inhalation: • students get too close while generating the ember.	• 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.
Muscle strain: • in wrists or arms from prolonged or incorrect fire-starting technique.	• Teach students how to use proper technique. • Get students to swap over frequently so they aren't in this position for prolonged periods.
Electric drill: • electric shock • entanglement of hair or other items • cuts or wounds for rotating drill bit • flying debris • trip hazard (if drill has power cord).	• 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.
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Monitoring and review (to be completed during and/or after the activity)	Yes	No
Have additional hazards been identified?	☐	☐
Were the control measures effective?	☐	☐
Are further or different actions required?	☐	☐
Details:		