

## materials

# Sorting materials by their properties

## Lesson at a glance

Open by holding a wooden spoon beside a plastic spoon and asking why someone might choose one material over the other. Name material and property, then groups handle a tray of wood, plastic, fabric, foil and glass, noticing hard/soft, bendy/stiff, see-through and waterproof with a careful drip test. They sort twice by different property pairs, then predict where four new materials land on the sorting-tree interactive. Record observations and one sort on the Investigation Journal page, then match a material to a job it suits and say why.

## Learning objectives

- Name common material properties such as hard, soft, see-through, bendy and waterproof
- Sort everyday materials by chosen properties
- Match a material to a job it suits and say why

## Before the bell – prep

Night before, bag one tray per group: wooden block or ruler, clear plastic cup, fabric scrap, foil scrap, small glass jar. Add one shallow water tray and two sorting hoops or labelled paper mats per group. Print property word cards (hard, soft, bendy, stiff, see-through, waterproof). Open the sorting-tree interactive in explore mode.

**Materials**

| Item                                                                    | Qty | Per   | Source             | Low-cost substitute                                                |
|-------------------------------------------------------------------------|-----|-------|--------------------|--------------------------------------------------------------------|
| small wooden block or wooden ruler                                      | 1   | group | classroom          | a wooden pencil or lollipop stick bundle taped together            |
| clear plastic bottle or cup                                             | 1   | group | classroom          | clear food packaging pot                                           |
| fabric scrap (cotton or felt)                                           | 1   | group | classroom          | an old clean sock or cloth                                         |
| aluminium foil piece                                                    | 1   | group | supermarket        | clean foil from a food tray, edges folded smooth                   |
| small glass jar                                                         | 1   | group | classroom          | thick clear plastic jar if glass is not suitable                   |
| shallow water tray or dish                                              | 1   | group | classroom          | a clean takeaway container lid with a little water                 |
| sorting hoops or labelled paper mats                                    | 2   | group | classroom          | two sheets of paper labelled Group A and Group B                   |
| property word cards (hard, soft, bendy, stiff, see-through, waterproof) | 1   | group | provided printable | write the six words on sticky notes or scrap card                  |
| Investigation Journal page                                              | 1   | pupil | classroom          | ruled paper with space for observation notes and one property sort |
| wooden spoon and plastic spoon for the hook                             | 1   | class | classroom          | any two everyday objects of different materials                    |

**Safety watch-point**

Glass stays on the tray during handling and sorts; drip water only, no dunking; wipe spills at once; no tasting any material.

## Teaching moves

- **Getting Started:** Hold up the wooden and plastic spoons only. Ask why someone might choose wood for one and plastic for the other, then stop — do not list properties yet. Capture two or three ideas on the board. If talk stalls, add the thatch-to-slate roof line as one Irish example of matching a material to a job.
- **Properties we can notice:** Put only the two anchor words — material and property — plus the short pairs (hard/soft, bendy/stiff, see-through or not, waterproof or not) on the board. Resist reading a glossary; the words stick when pupils meet them on the tray next.
- **Handle and notice:** Model one worked cycle with foil: wonder, predict it will bend, bend it, drip one drop, observe water sitting on top, then name bendy and waterproof. Send groups to explore. Name each property pair out loud as groups meet it. On wood, wait a few seconds or blot — darkening shows water soaking in, so wood is not waterproof. Glass stays on the tray; drip only, no dunking.
- **Sort by property:** Give two hoops or labelled mats. Groups choose the first property pair themselves, sort for about six minutes, then re-sort by a second pair so the same object can land in different groups. Look for property names and justifications, not 'I like this one'. Keep glass on the tray and wipe drip-test water.
- **Predict, then send it down the tree:** Drive the sorting-tree interactive yourself in explore mode with four materials not on any tray. Force a spoken class prediction before every branch. Spend time on greaseproof paper (looks like paper, is waterproof), cork (hard or soft), foil (children call it hard until they picture a scrunch) and sponge as the easy start. Do not pass real samples until after predictions.
- **Record in your journal:** Model one board line only: 'Foil — bent easily; water sat on top.' Pupils complete observation lines for tray materials and one sorting table (property pair plus which materials in each group). Keep everyone on the printed Investigation Journal page; support writers with the word cards or board bank.
- **Jobs materials suit:** Think-pair-share first using one journal material and property, then a job and why. Take three or four examples on the IWB. Anchor with classroom objects: why is the window glass not fabric; why are the wellies plastic or rubber not cotton. Revoice so property language stays precise. Challenge vague 'strong' — ask whether they mean hard, waterproof or not bendy.

## What it should show

Pupils typically name wood as hard and stiff, foil as bendy with water sitting on top, fabric as soft but not waterproof, clear plastic or glass as see-through, and plastic as waterproof. A common surprise is calling wood waterproof when the first drop sits — waiting or blotting shows it darkens as water soaks in. Successful job talk links a recorded property to a sensible use (waterproof plastic for a lunchbox; see-through glass for a window).



### Misconceptions & interventions

- **Pupils say the object name instead of the material — ‘spoon’ rather than ‘wood’ or ‘plastic’.** — Gently revoice on the spot: ‘Yes, it is a spoon — and the material is wood.’ Point back to the tray item while you say the material word.
- **Pupils call wood waterproof because the first water drop sits on top.** — Wait a few seconds or blot with a fingertip so the dark patch shows soaking. Contrast with plastic or foil where the drop stays on top.
- **Pupils use ‘strong’ for every good material, or call foil hard until they think about scrunching it.** — Ask what they mean — hard, waterproof, or not bendy? For foil, mime a gentle scrunch and re-sort it under bendy.



### Differentiation

- {‘emerging’: [‘Give the printed property word cards and stay at the teacher table for the first sort so pupils place two items with a spoken property word.’, ‘Accept one completed observation line and one sort row on the Investigation Journal, using the board model as a sentence starter.’], ‘developing’: [‘After two property sorts, ask why the same object moved groups when the question changed.’, ‘Prompt one clear material–job–because link from their journal notes in the pair share.’], ‘proficient’: [‘If time allows, invent a third sort such as natural or made by people and justify each placement.’, ‘Jot a poor material–job match (e.g. fabric for a roof tile) and explain which property fails.’]}



### Cross-curricular hook

Link to Irish homes and weather: thatch gave way to slate and tile because those materials suit wet roofs better.