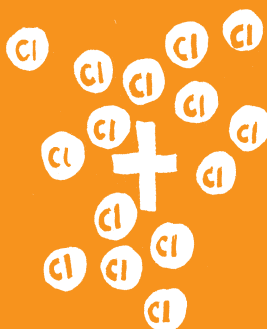


METAL ETCHING



METAL ETCHING

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The brief

Etch a pattern into a sheet of metal using only things found in your home.

The method

1. Fill the bowl with 4cm of water.
2. Mix salt with the water until no more can be dissolved.
3. Draw a pattern using the permanent marker on one sheet of metal.
4. Connect one crocodile clip to the metal on which you have drawn the pattern and the other to the spare piece of blank metal.
5. Place both pieces of metal in the salty water. Make sure they're as far apart as possible – don't let them touch.
6. Connect the patterned metal to the positive terminal of the battery and the plain metal to the negative terminal. The water will begin to fizz.
7. Wait about 10 minutes, then disconnect the battery and remove the patterned metal.
8. Clean it with water and nail varnish remover to remove the permanent marker. You should see that the pattern you drew is now permanently etched into the surface of the metal.



Materials

Table salt
Paper clips
Scissors
(with adult supervision)
Two pieces of sheet metal – mild steel
Copper or brass
9v battery
Two crocodile clip cables
Nail varnish remover
A permanent marker



How does it work?

This process is called electrolysis. When you place electrodes into the salt water and apply electricity, chloride ions move towards the positive electrode and the sodium ions move towards the negative electrode. The reaction causes metal to be transferred from the positive side into the solution, etching away its surface.