

HOW TO CLEAN HOTPLATES (Not The Teflon Coated Ones)

In schools hotplates seem to have a bad habit of turning black. The secret to cleaning them is hydrogen peroxide.

The way this is thought to work is as follows:

This burnt black mess generally consists of mostly carbon. When carbon based “stuff” such as plastic coating of the cord comes in contact with the hotplate and is heated to above 150°C, the volatile components evaporate leaving larger long chained hydrocarbon molecules behind. These long hydrocarbon molecules bond electrostatically to the metal surface. The use of hydrogen peroxide is thought to loosen the bond between the hot plate metal surface and the black hydrocarbon substance. The mechanism of how this works is not clear.

(It is interesting to note that hydrogen peroxide is also used to clean aluminium coins by collectors)

You will need.

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| • Dish washing detergent and ethanol | Just for cleaning and drying.
(e.g. Palmolive detergent and any commercially available ethanol such as metho or shellite) |
| • Non-metallic scourer | Scotchbrite® or similar for cleaning. |
| • Hydrogen-peroxide | The 3% version in the brown bottle from the supermarket is fine. |
| • Ceramic tray, big enough to fit the hotplate upside down. | This tray can't be metal or plastic – usable items can be found in the local op shop cookware department or the local nursery's outdoor garden pot trays. |
| • A few small beads < 10mm diam. | Use glass boiling beads or get glass beads from a \$2 shop- test these with a Bunsen burner to ensure they can stand heat. |



How to do it. Do this in a well-ventilated area or fumehood – you're going to generate volatile compounds. **Do not breathe the fumes.**

1. Degrease the top of the hotplate thoroughly with detergent being careful to keep internal electrics from getting wet. Then wipe down with ethanol to remove any remaining moisture.
2. Make the ceramic tray level on the bench close to the power outlet. Put the small beads in the tray, this will serve to hold the hotplate just above the tray surface.
3. Put hotplate upside down in tray, on top of the beads.
4. Pour in just a few millimetres of hydrogen-peroxide ensuring that the hydrogen-peroxide is just touching the entire hotplate surface.
5. Set the hotplate to 50°C or its lowest temperature - you don't want to boil the hydrogen-peroxide, just heat it.
6. Heat for 20 to 40 minutes - check the hydrogen-peroxide level regularly to ensure it is not getting too low.
7. Turn off the hotplate and allow to cool.
8. Carefully remove the hotplate and turn it up the right way.
9. Use a Scotchbrite® or similar non-metallic scourer to clean the hotplate - wear gloves to keep your hands clean. Stubborn lumps of material can be carefully chipped of the surface with a sharp metal spike (screwdriver/needle etc.)
10. Wash thoroughly with water, once again being careful to keep internal electrics from getting wet.
11. Stand back and admire your good work.



A risk assessment on this procedure should be conducted before cleaning the hot plate. Appropriate safety measures should then be undertaken throughout the procedure.

(Thanks to Liz Beech, Brema Samuel & Aileen Little for assisting in the development of this cleaning technique.)