

Iodine—Violet or Brown?

IODINE IS an interesting element to experiment with. It is easily driven out of its compounds as beautiful, violet fumes that turn into grayish-black, metallic-looking crystals on cooling. These crystals can be further purified by turning them into vapor again, and again cooling them into crystal form. This process is called "sublimation."

You are probably familiar with the 2% alcoholic solution of iodine known as "tincture of iodine." It is found in almost every home medicine cabinet and is used as a disinfectant for wounds. Iodine has many other uses — in photography and in the preparation of various medicines and dyes.

Iodine has the bad habit of staining practically



IODINE
Element 53.
At. wt. 126.91.
Gray-black crystals of a peculiar odor. Sublimes with violet color. Combines directly with metals and non-metals. It has a density of 4.9.

everything with which it comes in contact with a brown stain that won't come off in washing. That's why it is advisable to have sodium thiosulfate — photographer's fixing salt, "hypo" — around when you work with iodine. Hypo in solution forms a colorless compound with iodine.

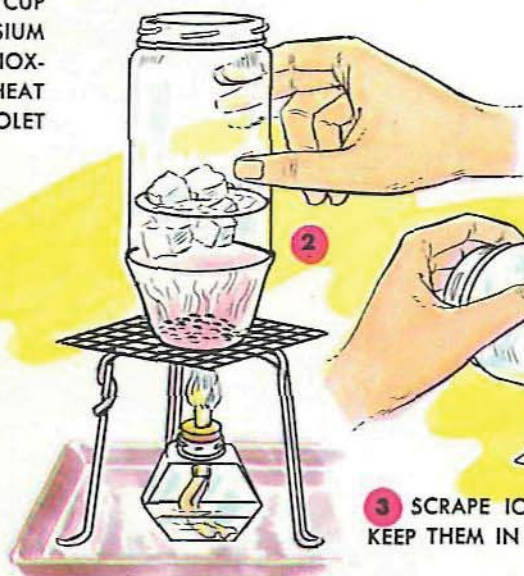
MAKING IODINE

1 IN A PYREX CUSTARD CUP MIX TOGETHER 2 g POTASSIUM IODIDE, 2 g MANGANESE DIOXIDE, 4 g SODIUM BISULFATE. HEAT MIXTURE GENTLY. SOON VIOLET FUMES EMERGE.



Be careful not to breathe fumes.

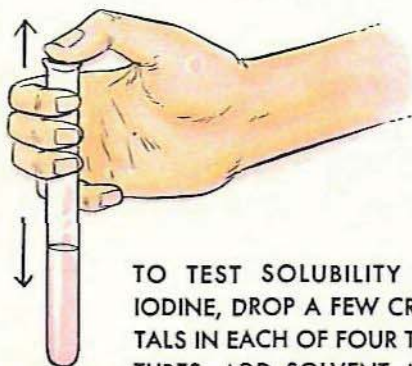
2 DROP HALF A DOZEN ICE CUBES INTO A JAR. ADD A LITTLE WATER. PLACE JAR AS A LID ON TOP OF CUSTARD CUP. THE VIOLET FUMES SETTLE ON BOTTOM OF JAR AS GRAYISH-BLACK, SHINY IODINE CRYSTALS.



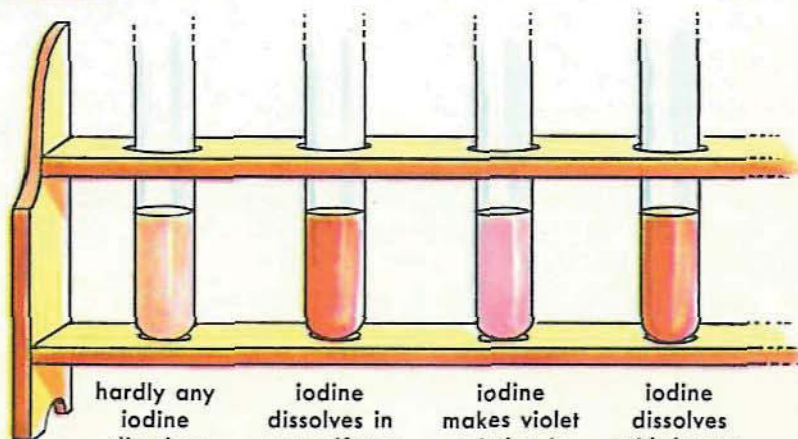
3 SCRAPE IODINE CRYSTALS OFF BOTTOM OF JAR. KEEP THEM IN SMALL, TIGHTLY CLOSED BOTTLE.



SOLUBILITY OF IODINE



TO TEST SOLUBILITY OF IODINE, DROP A FEW CRYSTALS IN EACH OF FOUR TEST TUBES. ADD SOLVENT AND SHAKE TUBE.



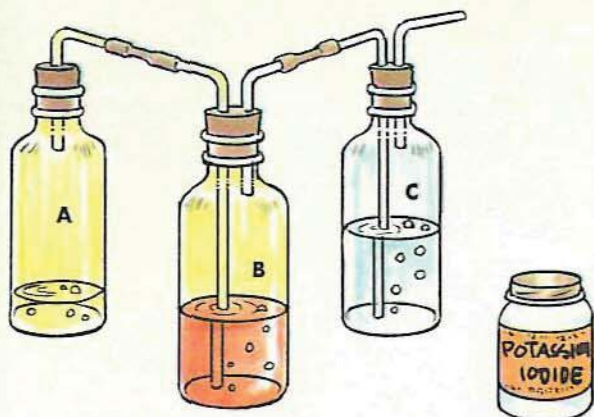
hardly any iodine dissolves when put in plain water.

iodine dissolves in water if you add potassium iodide.

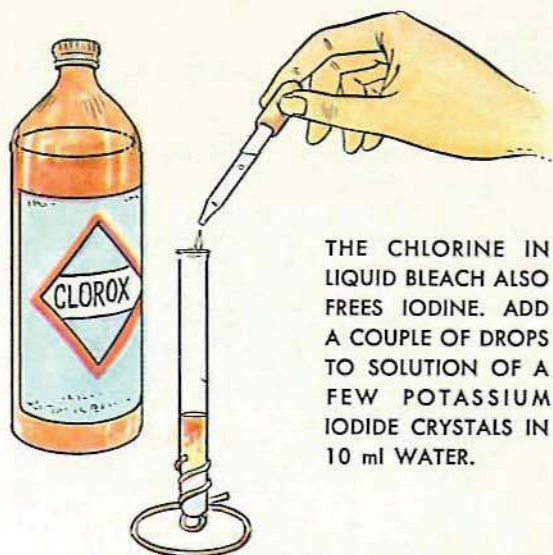
iodine makes violet solution in carbon tetrachloride.

iodine dissolves with brown color in alcohol.

IODINE FREED BY CHLORINE

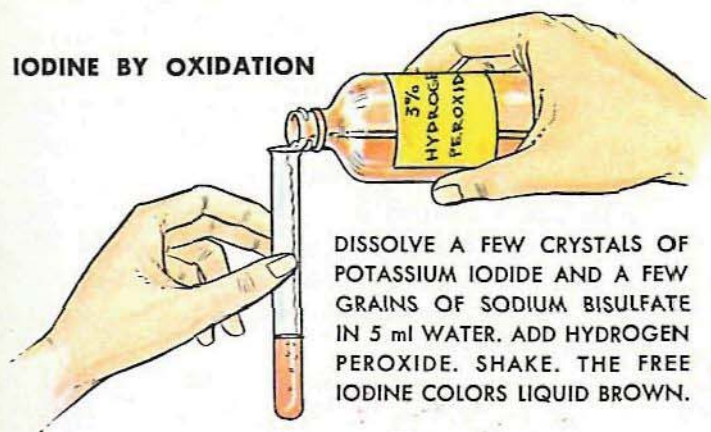


SET UP APPARATUS AS DESCRIBED ON PAGE 35 WITH THIS EXCEPTION: IN BOTTLE B, MAKE SOLUTION OF $\frac{1}{2}$ g POTASSIUM IODIDE IN 40 ml WATER. AS CHLORINE BUBBLES THROUGH THIS SOLUTION IT TURNS BROWN FROM THE FREED IODINE. WITH MORE CHLORINE IT CLEARS AGAIN WHEN COLORLESS IODIC ACID FORMS.

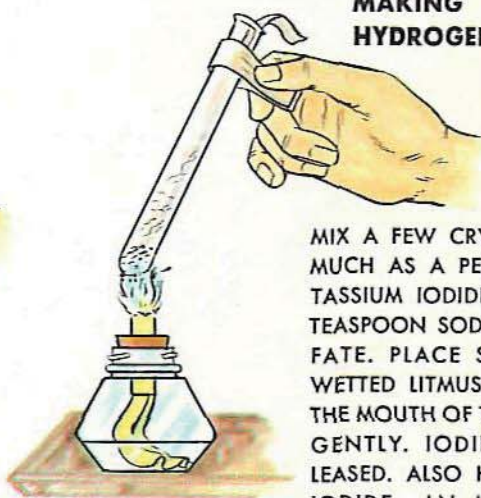


THE CHLORINE IN LIQUID BLEACH ALSO FREES IODINE. ADD A COUPLE OF DROPS TO SOLUTION OF A FEW POTASSIUM IODIDE CRYSTALS IN 10 ml WATER.

IODINE BY OXIDATION



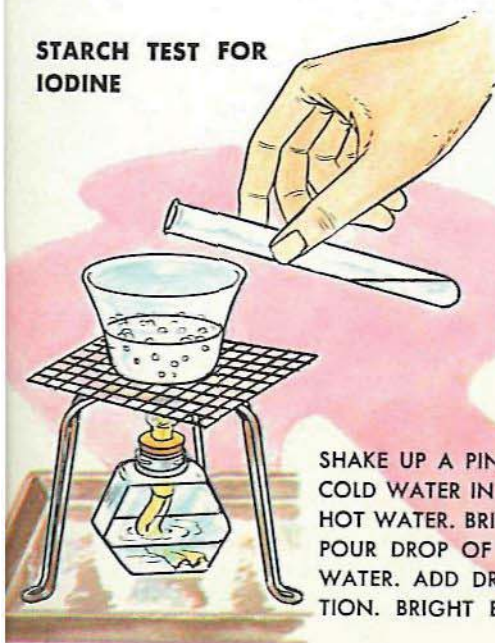
DISSOLVE A FEW CRYSTALS OF POTASSIUM IODIDE AND A FEW GRAINS OF SODIUM BISULFATE IN 5 ml WATER. ADD HYDROGEN PEROXIDE. SHAKE. THE FREE IODINE COLORS LIQUID BROWN.



MAKING HYDROGEN IODIDE

MIX A FEW CRYSTALS (AS MUCH AS A PEA) OF POTASSIUM IODIDE WITH $\frac{1}{4}$ TEASPOON SODIUM BISULFATE. PLACE STRIPS OF WETTED LITMUS PAPER AT THE MOUTH OF TUBE. HEAT GENTLY. IODINE IS RELEASED. ALSO HYDROGEN IODIDE—AN ACID THAT TURNS BLUE LITMUS RED.

STARCH TEST FOR IODINE



SHAKE UP A PINCH OF STARCH WITH COLD WATER IN A TEST TUBE. ADD TO HOT WATER. BRING TO A BOIL. COOL. POUR DROP OF MIXTURE INTO 10 ml WATER. ADD DROP OF IODINE SOLUTION. BRIGHT BLUE COLOR RESULTS.



REMOVING IODINE STAIN

PAINT PAPER WITH IODINE. DISSOLVE A FEW CRYSTALS OF SODIUM THIOSULFATE ("HYPO") IN WATER. PAINT WITH THIS SOLUTION OVER THE BROWN COLOR. YOU WILL GET WHITE LETTERS AS HYPO FORMS COLORLESS COMPOUND WITH IODINE.

