

Your Science Company© Stannous Chloride Test Solution Kit contains:

- Stannous Chloride, 25g
- Tin metal shot, 12.5g
- 1oz amber dropper bottle
- Instruction sheet

STANNOUS CHLORIDE TESTING SOLUTION

This solution is extremely useful in revealing the presence of gold, silver, platinum, iridium and palladium in solution. Some idea of the proportions in which they are present can also be deduced by the intensity of the color reaction. Only a small amount of stannous chloride crystals, and a smaller amount of pure tin metal are required. You will also need some concentrated hydrochloric acid, not included in this kit.

How to Make the Testing Solution:

Make up only a little of the testing solution at a time, as it does not keep well.

1. Add about a pennyweight (~1.6g) or less of the stannous chloride crystals to the dropping bottle.
2. Add a half pennyweight (~0.8g) or so of tin metal.
3. Fill the bottle $\frac{3}{4}$'s full of water. Clean, cold tap water will do.
4. Now add about 20 to 30 drops of hydrochloric acid to the bottle. Gently shake the bottle to mix the contents. This gives a milky liquid that is ready to use. The tin metal will dissolve very slowly and serves to keep the solution in good condition. *See below for how to test if your solution is still good.

TEST FOR PLATINUM

Add a drop or more of the Testing Solution to a spot plate or ceramic streak plate containing a small amount of your unknown metal solution. You can also perform the test on a clean, white paper towel or piece of filter paper.

Notice the color –

Pale yellow color indicates a weak solution of platinum.

Add a few more drop of the testing solution.

A deep yellow or brown color indicates a stronger platinum solution.

A black reaction indicates a very concentrated platinum solution.

A deep yellow color with the test solution is a characteristic of platinum and iridium.

TEST FOR GOLD

With a small sample of your unknown metal solution on a spot plate, add a drop of the test solution. After several moments add several more drops of the test solution. Note the first intense dark color, **deep purple or black**. This is characteristic of gold. After it stands a few minutes, notice the purple stain on the white porcelain. Do not let the liquids dry on the plate. Wash it promptly after each test, removing any stains with a drop of aqua regia and rinsing well. This test is very sensitive to gold. Even very low concentrations will show a purple reaction.

TEST FOR PALLADIUM

This color change is even more interesting than the others. When a drop of test solution is mixed with your metal solution, you see a deep yellow, not unlike the effect produced by platinum. After some minutes the yellow turns blue green. This **blue green color** is characteristic of palladium.

TEST FOR SILVER

Silver solutions, such as silver nitrate, do not give any color-reaction with the testing solution. What you will see when the two solutions are mixed is a white cheesy precipitate of silver chloride, like that obtained when table salt is added to a silver nitrate solution.

TEST FOR BASE METALS

Solutions containing only such base metals as iron, copper, zinc, nickel and cadmium give no color change with stannous chloride. Lead may give a white precipitate that looks like silver chloride, but if you employed the dichromate test** this will cause you no confusion.

***To test if your solution is still good:** You can determine the effectiveness of your solution by testing it against a small sample of known gold solution. If you get a purple reaction, your test solution is still good.

****Dichromate Test for Silver:** Mix up nitric acid and a few crystals of potassium dichromate in a 1oz dropper bottle. Place a drop of this solution on the suspected article (after getting rid of lacquer, etc.) and note the color effect. Silver will show a very strong, definite red, through the formation of silver dichromate.