

Making Sparklers College For Kids

Preparation of a Sparkler

Step 1: Weigh out 10.0 g of the oxidizer mix into a weigh boat. Weigh out 3.9 g of the metal mix #1 into a separate weigh boat. Weigh out 2.0 g of starch into a third weigh boat.

Step 2: Place 2.0 g of soluble starch in a 150 mL beaker and add 4 mL water. While stirring, heat the starch mixture gently until it forms a thick paste.

Step 3: Remove the beaker from the heat. Add the oxidizer mix and metal mix to the starch mixture and stir well. If areas of the mixture remain dry, add a few drops of water.

Step 4. Dip a 20-cm length iron wire into the beaker. Rotate the wire to keep the paste on the wire and to ensure an even coating. Note: if your paste is thick enough you can use GLOVED hands to mold the paste on to the wire. Pull the coated wire out of the beaker and use a heat gun about 10 cm from the wire to help dry the paste.

Step 5. Stand the coated wire in a beaker and place in an oven at 120°C to dry the sparkler thoroughly.

Ingredients

oxidizer mix #1: 81% barium nitrate, $\text{Ba}(\text{NO}_3)_2$, and 19% potassium chlorate, KClO_3 .

oxidizer mix #2: 77% strontium nitrate $\text{Sr}(\text{NO}_3)_2$ and 23% potassium chlorate, KClO_3 .

metal mix #1: 80% iron powder, 16% aluminum powder, and 4% magnesium powder

metal mix #2: 75 % iron powder, 15% aluminum powder, and 10% copper powder