

TEXTURED FIREWORKS

TEACHER(S):

DURATION: One 30-45 minute class period

21st CENTURY SKILLS:

- | | | | |
|---|---|--|-------------------------------------|
| <input checked="" type="checkbox"/> Critical Thinking | <input checked="" type="checkbox"/> Creative Thinking | <input type="checkbox"/> Collaborating | <input type="checkbox"/> Initiative |
| <input type="checkbox"/> Communicating | <input type="checkbox"/> Media Literacy | <input checked="" type="checkbox"/> Informational Literacy | |
| <input type="checkbox"/> Tech Literacy | <input type="checkbox"/> Flexibility | <input type="checkbox"/> Social Skills | <input type="checkbox"/> Leadership |
| <input type="checkbox"/> Productivity | | | |

PRE-ASSESSMENT

Discuss experiences students have had with fireworks displays. Include unique displays they have seen, where they viewed the displays, and what questions they have about displays. Sample questions might include: What makes the colors? How do they create the designs? How do they time everything to the music?

ENGAGEMENT

Read the Smithsonian article [5 Things You Didn't Know about the Science of Fireworks](#). Ask students to think-pair-share with a neighbor about the article and if it answered any of the questions brought up during the class discussion.

LESSON SEQUENCE

Step 1. Discuss the chemical reaction that takes place when the charge is ignited to transfer energy from the main fuel to the colorant chemicals.

Step 2. Give each student a plain piece of black construction paper, 3 colors of watercolor paint, a straw and some salt.

Step 3. Ask students to paint a fireworks design of shapes on their paper.

Step 4. Have students add salt strategically to each firework and to write their observations of the reaction with the paint on a separate piece of paper.

TEACHER NOTES

MATERIALS LIST:

- salt
- white construction paper
- watercolor paint
- water and brushes
- journal and pencil
- Music for Royal Fireworks: Overture, Handel
- MP3/CD player
- [Smithsonian article](#)

ASSESSMENT:

[Create a painted fireworks live display](#)

Have students listen to a selection from Royal Fireworks by Handel. In groups of 3-4, students can sketch out when there should be a painted firework reaction occur to enhance the music. Students should also decide what color and shape would be most appropriate. Then, have students create their artwork "live" to the music using the steps from the activity above. Students will need to understand the timing of the chemical reaction, as well as interpret how the art will enhance the music.

CLOSING

Each student can share their fireworks painting. As a class, discuss what observations students made on the chemical reaction of salt and watercolor paint. Ask students to describe the transfer of energy that occurred once the salt was added. Did the color explode or implode?