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Colors in the Sky: The Science of Fireworks



Have you ever watched fireworks light up the night sky and wondered how they make all those bright colors? Fireworks are not just fun to watch—they're also full of science! The amazing colors come from chemical reactions that happen high above the ground.

Fireworks are made with small packets called "stars." These stars are packed inside a shell, along with some explosive powder. When the firework is launched into the air, the powder explodes, and the stars fly out. Each star contains certain elements—tiny bits of special materials—that burn in bright colors when they get hot.

Different elements create different colors. For example, strontium makes red. Copper creates blue. Sodium burns bright yellow, while barium gives off green. These elements are chosen carefully by scientists and firework makers to create colorful patterns in the sky.

So how does it work? When the firework explodes, it releases a lot of heat. This heat excites the atoms in the elements. When those atoms calm down again, they release energy as light. The color of the light depends on what element is used. It's a lot like how a stove burner glows red when it's hot—but fireworks do it with more colors and much more excitement!

Besides color, fireworks are also designed for shape and movement. Some spin, some shoot out in rings, and others sparkle or crackle. This is done by arranging the stars in certain patterns and using extra chemicals to make sound effects.

Even though fireworks are fun, they must be handled very carefully. They are made with chemicals that can be dangerous if used the wrong way. That's why trained experts create firework shows for big events like the Fourth of July or New Year's Eve.

So next time you see a burst of red, green, or blue light in the sky, you'll know it's more than just a pretty show—it's a science experiment in the air!