

How model rockets work

[Business](#)



Most model rockets have pre-manufactured single-use engines.

These have become popular because they allow people to fly their model rockets without having to handle the dangerous propellants. The engine consists of the casing (typically paper or lightweight wood) with a clay or ceramic nozzle at one end and a clay end cap at the other end. Between the nozzle and the end cap are three different charges. The Propellant Charge is what gets your model rocket off the ground and into the air. Once this charge has burned off, your rocket will have reached a sub-atmospheric altitude (usually between 1, 000 and 1, 500 feet). The first charge will burn through and ignite the second charge or Delay Charge during the coasting phase of the rocket's flight.

During this phase, the delay charge emits smoke, enabling you to spot the rocket in the sky. The final phase, the Ejection Charge, activates the recovery system for the model rocket. The ejection charge produces a small explosion, which ejects the nose cone and deploys the parachute for recovery of the rocket. Fuel is an essential part of combustion. Whenever something burns, there must be fuel. The fuel used can be in the form of a liquid, gas, or solid.

Some examples of fuel used in combustion are gasoline, wood, alcohol, and flammable gasses. When the fuel runs out, the combustion process will cease. The oxidizer in a combustion process can also be present in the form of a liquid, gas, or solid. Air is the most common oxidizer because it contains oxygen; all combustion engines use air as the oxidizer. Removing the

oxidizer will cause the process to halt. Lastly, the combustion process must also have heat.

Heat is what starts the process and causes it to continue. However, once the process starts, additional heat is not necessary for it to continue. This is because the very nature of combustion produces heat. Therefore, it is able to use its own heat to continue. While the combustion process is in progress, exhaust is produced. This exhaust usually comes in the form of a mix of carbon dioxide and water.

Other chemicals that can be produced in exhaust include various nitrous oxides. Exhaust is usually in the form of a gas because of the heat the combustion process produces, but it can also be a liquid or a solid. There are four ways to stop the combustion process: take away the fuel, take away the oxygen, take away the heat, or stop the reaction. An example of taking away the fuel is when your car stops running because it is out of gasoline. Putting baking soda on a grease fire works because the baking soda deprives the fire of oxygen it needs.

Putting water on a fire removes the heat and dislocates oxygen, making it unavailable for the fire. Lastly, firefighters can use chemicals that will stop the combustion reaction, causing the fire to die, thus making the environment safer. From combustion of the fuel to the loss of fuel, the model rocket, including other rockets, is quite an ingenious idea.