

Teacher tips for Solid-Fuel Rocket Igniters/Starters

Recently, Estes changed the composition of their solid-fuel rocket igniters (now called starters) to comply with federal regulations. These new starters require you to follow different techniques to ensure successful solid-fuel rocket launches.

Note: You can identify whether you have an igniter or a starter by looking at the tip of the device. If there is a dark red/brown, crusty-looking tip, it is an **igniter**. If there is a clear, glue-like substance on the tip, it is a **starter**.

These tips are in order of importance:

1. When you or your students insert the starter into the rocket engine, be sure that the starter is all the way in and is in contact with the propellant inside the rocket engine. Use the plastic plug that came with the engine to lock the starter into this position.
2. When you push the launch button, hold it down for two seconds or longer.
3. Use only fresh, high-quality alkaline batteries in the launch controller.

Additional Information:

The new starters require 6 V @ 2.5 A for ignition. The igniters used to be coated with pyrogen, a substance that ignited easily with a smaller current through the nichrome wire. The ignition of the pyrogen then provided the necessary heat to ignite the solid-fuel propellant within the engine. The new starter requires the nichrome wire to heat up to the ignition temperature of the propellant. This heating (much like a wire inside a toaster) does not happen immediately, which is why we are recommending holding down the launch button for two seconds or more. As noted above, this extended heating period for the starters requires more energy from the batteries, which will mean fewer launches in between battery changes.