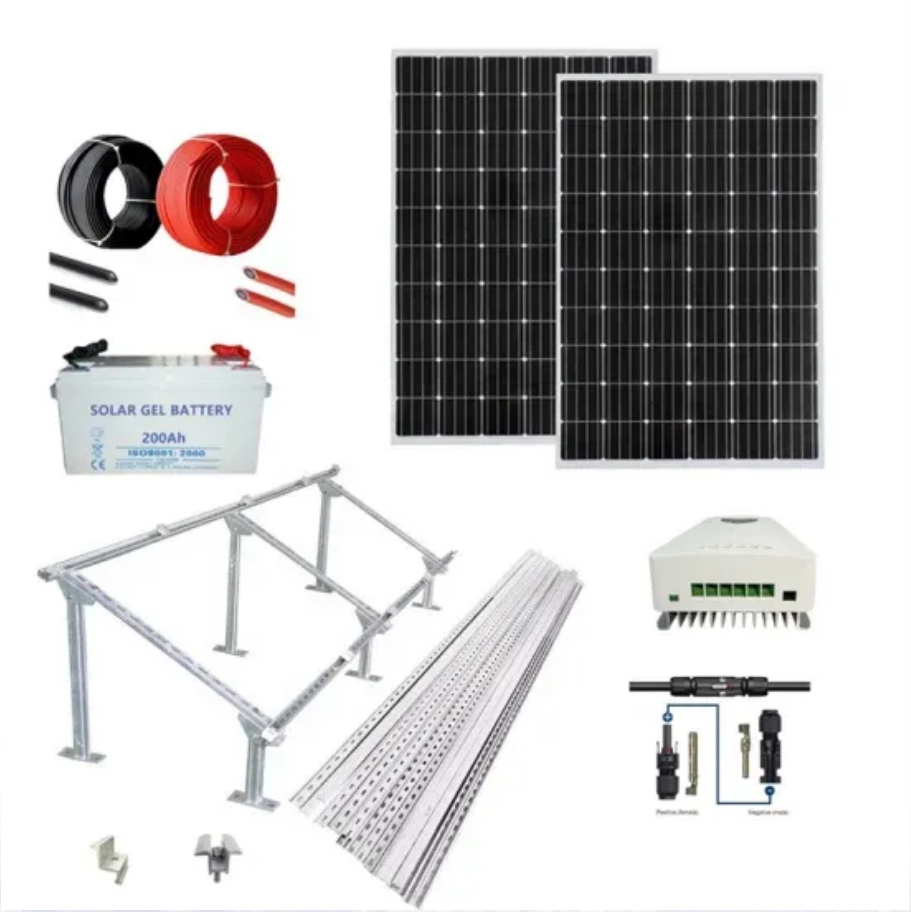
Kongres Container

How big should the solar constant temperature container be



Overview

Simple Jar and Thermometer small, flat sided glass bottle with 200 ml capacity—the more regular the shape the easier it will be to calculate the surface area later cork stopper for the bottle with a hole drilled in it to accept a thermometer; the regular cap of the bottle can be used, but the hole for the thermometer may have to be sealed with silicon or caulking after the thermometer is placed in it.How to measure the solar constant?

In this lab we will make a measurement of the solar constant. The solar constant is a measure of the intensity of the sun at the surface of Earth. It is expressed in units of W/m2. To measure the constant, we will use water to absorb solar energy for a certain amount of time.

What is the maximum temperature for a summer solstice?

For the maximum-temperature condition, select noon on June 20, the summer solstice, when the solar declination is 23.5 . Assume that the solar constant (the solar flux on a surface perpendicular to the solar vector) is 343 Btu/ (h) (ft 2) (1080 W/m 2), the air temperature is 90 F (305 K), and the effective sky temperature is 5 F (258 K).

How do we measure solar energy absorbed by water?

It is expressed in units of W/m2. To measure the constant, we will use water to absorb solar energy for a certain amount of time. From the temperature rise of the water, we can determine how much energy it absorbed, and since we know the area of the container and how long it absorbed energy, we can determine the intensity.

What is a good value for a solar constant?

The value usually quoted for the solar constant is 1000 W/m2. Q8) How does the value you determined for the solar constant compare to the accepted value – i.e. too big, too small, just right?

Q9) Is this consistent with the effects of time of day, weather, and over

estimating the area?

Q10) Another significant effect is the time of year.

How to check the temperature of a water bottle?

Place the bottle on its side in the sun in a safe place. Start the stopwatch. Allow the temperature of the water to climb 5 to 10 C°. You should check on the bottle every few minutes. 7. Record the final temperature of the bottle

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