

**SICK!**  
science   
insanely cool experiences

# SUMMER SCIENCE SURVIVAL GUIDE

as seen on



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# A WORD ABOUT THIS ACTIVITY HANDBOOK

Great teachers never miss the opportunity to create a learning experience out of something that kids love – and that’s exactly what this experiment guide is all about; connecting some fun science with summer play. The activities all have that great “gee-whiz” factor, plus they introduce children to cool scientific principles in such a sneaky way that they won’t even know they’re learning! It’s important to read through the brief instructions that accompany each activity to get the “flavor” and story before you begin.

## SAFETY!

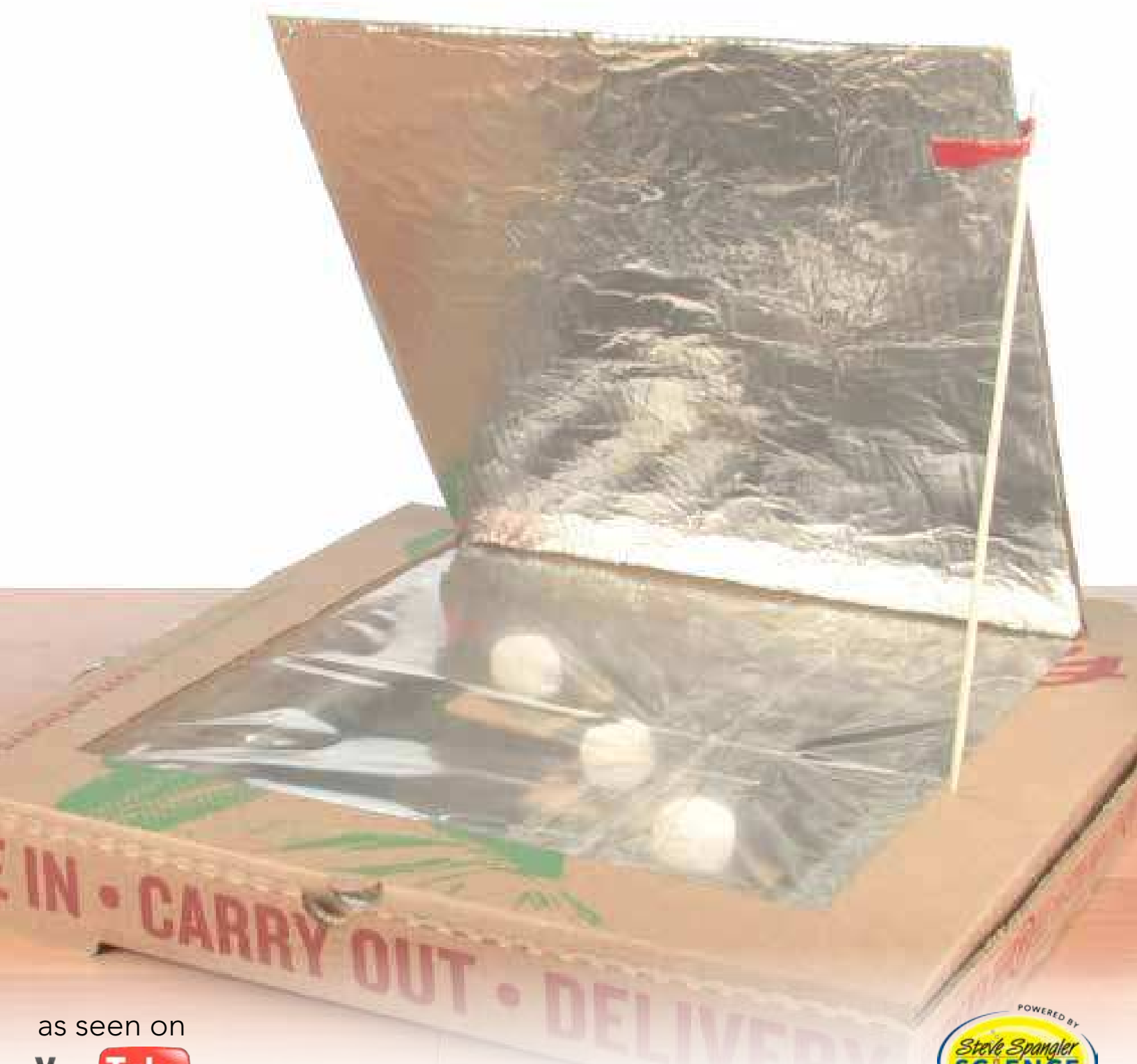
Everything in this handbook has been thoroughly tested and is not considered to be hazardous, if used with adult supervision. That’s right, the activities in this handbook require adult supervision. This handbook is not intended to be tossed at a kid with the instruction, “Have fun.” Instead, you might want to use this opportunity to interact with a few ankle-biters and learn a little science at the same time.

Remember that this is a science handbook and science can be messy. There are liquids, so you will get wet. Stuff falls on the floor, so you will need to clean it up. Don’t put chemicals in your eyes or ears and don’t eat your experiment. Trust us, they don’t taste good and it’s a bad thing to do. The bottom line is that this experiment handbook requires adult supervision and common sense – simple concepts to ensure a fun and safe experience.



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SOLAR OVEN  
S'MORES



as seen on  
**You Tube**™

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## WHAT YOU NEED

PIZZA BOX  
2 CLEAR SHEET PROTECTORS  
BLACK CONSTRUCTION PAPER  
TAPE (CLEAR & DUCT)  
UTILITY BLADE  
THERMOMETER  
BBQ SKEWER  
GLUE  
TIN FOIL  
RULER  
PEN  
ADULT SUPERVISION



Draw a square 2 inches from the edges of the box.



Cut out 3 sides of the square to create a flap.



It will look like this when it is done.



Measure and cut tin foil to line the bottom of the pizza box.

3



Apply glue to the bottom of the box.

4



Apply glue to the inside of the flap.



Lay the tin foil in the box and smooth it down



Attach some foil to the inside of the flap.

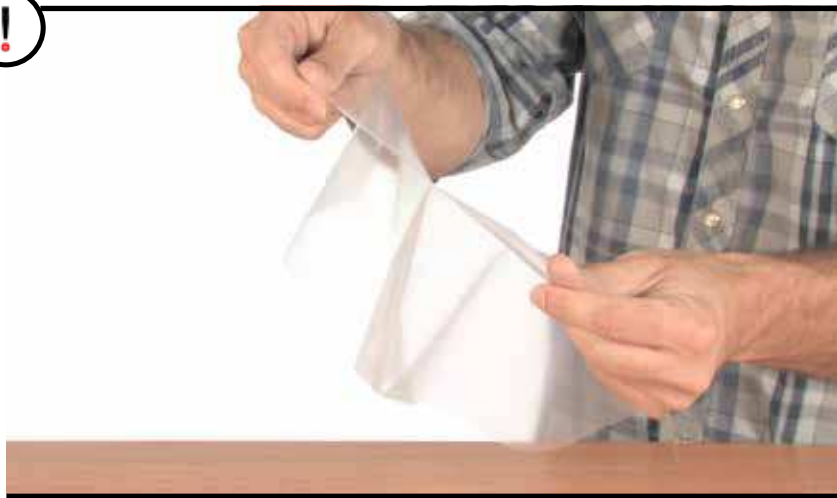
5



Cut a square piece of black construction paper that is smaller than the bottom of the pizza box.



Center the construction paper to the bottom of the box and adhere it with clear tape.



Separate the sheet protectors so they are one layer of plastic.



Tape the layers of plastic together.



Tape the plastic as tight as possible to the inside lid of the pizza box.



This is what it should look like.



Poke small holes 2 inches apart along the side of the flap.



Wrap a thin piece of tape around the skewer as shown.

11



Tape it to the side of the flap to create a kick-stand for the flap.

!



Load up your oven with treats.

!



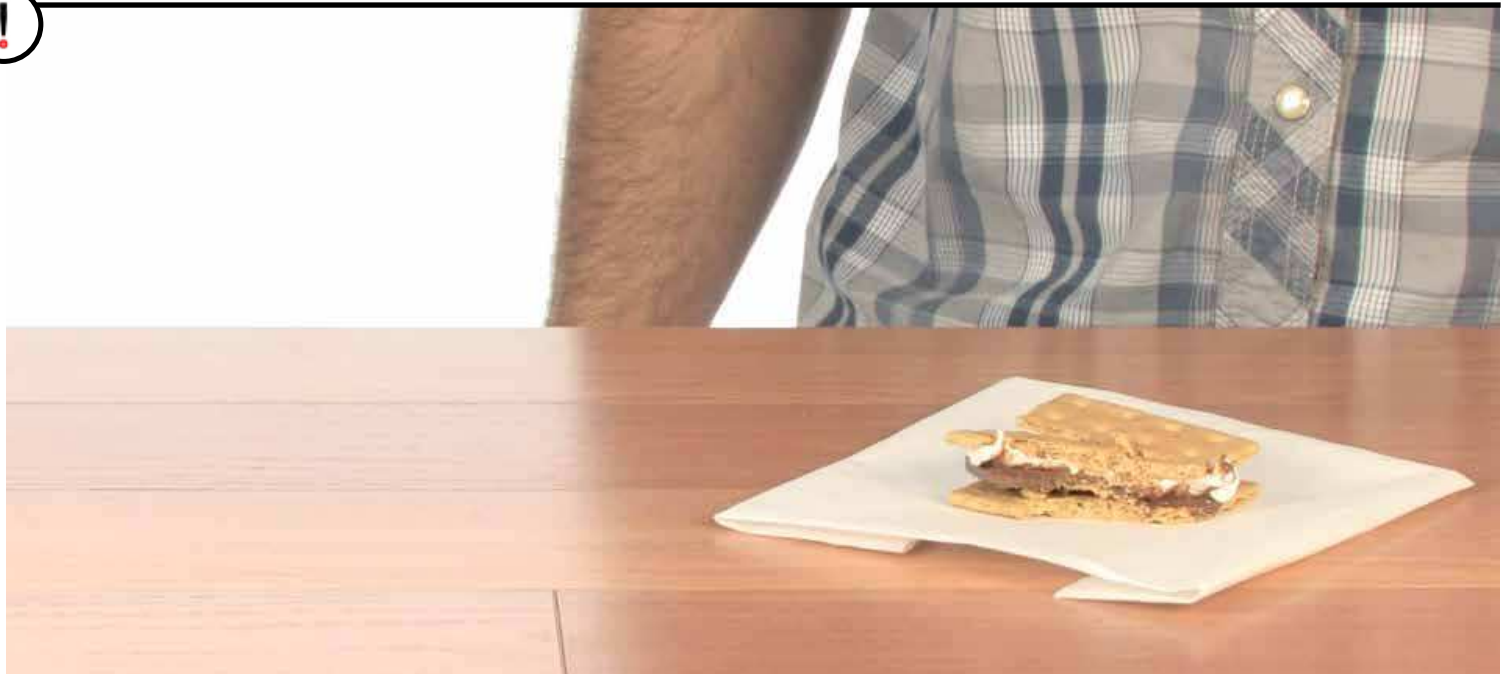
Add a thermometer to test how hot your oven becomes.

12



Set your solar oven in the sun and watch the s'mores heat up.

!



Enjoy!

## HOW DOES IT WORK?

The Solar Oven is what is more widely known as a solar cooker and works on the principle of converting sunlight to heat energy and retaining the heat for cooking. To make the process work, you cover as much of the box as possible with reflective material in order to catch as much sunlight as possible. In this case, you are using tin foil. The tin foil not only catches the light, but reflects it as well. This ensures that the majority of the sunlight is caught and used.

Black construction paper is used as a cooking surface because the color black retains heat very well. If you've ever worn a black shirt on a sunny day, or sat down on a black chair in the summer, you know that black surfaces absorb and retain a lot of heat. Ouch! You could actually absorb even more heat with a more conductive black material, like metal. However, it would make creating your oven a much more difficult process.

As heat is retained by the construction paper, the air molecules inside the oven are heated by the paper. Each molecule slowly becomes heated through convection (or the transfer of heat from a hot region to a cool region through circulation) until the temperature inside of the oven rises significantly. The increased air temperature then transfers heat to the s'more. Next thing you know, you're chowing down on delicious, melty s'mores!





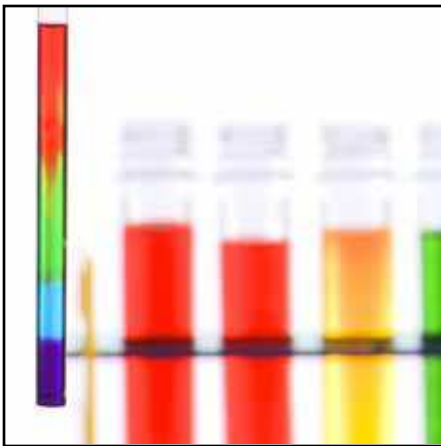
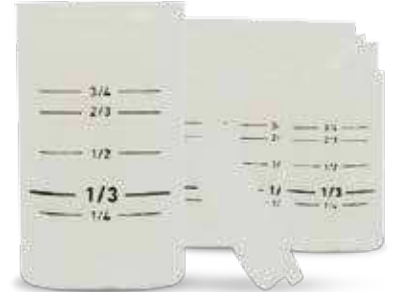
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