

Coldest Cooler

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Background:

Keeping food and beverage items cold is important for safety as well as enjoyment. In the heat of the summer, it is important that the cooler keeps ice cold as long as possible.

Objective: The students will construct a cooler that will keep ice cubes from melting quickly.

Materials:

Aluminum cans, plastic bottles, milk cartons, milk jugs, any other recycled container, materials for insulation such as, aluminum foil, paper, cotton, tape
For testing you will need: ice cubes, ceramic heater, timer

Assignment:

You are to design a cooler out of recycled materials of your choice (consult with teacher about your choice before construction). You are trying to produce a cooler that will keep ice cubes solid longer than anyone else in the class. We will subject the cooler to high temperatures and periodically check for melting during the experiment.

Requirements:

The cooler:

- The shell must be made from recycled materials
- There must be a way to open and close the cooler.
- Maximum size of cooler is 1ft. tall, 1ft. wide, and 1ft. deep
- Cooler must be large enough to hold 3 standard ice cubes
- Cooler must be watertight (no leaks)

Tennessee Foundations of Technology Performance Standards:

1A, 1E, 2A, 2B, 2D, 3E, 4B, 7B, 7C,

Rubric for Technology Education Awareness Poster

CATEGORY	20	15	10	5
Plan	Plan is neat with clear measurements and labeling for all components.	Plan is neat with clear measurements and labeling for most components.	Plan provides clear measurements and labeling for most components.	Plan does not show measurements clearly or is otherwise inadequately labeled.
Construction - Materials	Appropriate materials were selected and creatively modified in ways that made them even better.	Appropriate materials were selected and there was an attempt at creative modification to make them even better.	Appropriate materials were selected.	Inappropriate materials were selected and contributed to a product that performed poorly.
Construction - Care Taken	Great care taken in construction process so that the structure is neat, attractive and follows plans accurately.	Construction was careful and accurate for the most part, but 1-2 details could have been refined for a more attractive product.	Construction accurately followed the plans, but 3-4 details could have been refined for a more attractive product.	Construction appears careless or haphazard. Many details need refinement for a strong or attractive product.
Journal/Log - Content	Journal provides a complete record of planning, construction, testing, modifications, reasons for modifications, and some reflection about the strategies used and the results.	Journal provides a complete record of planning, construction, testing, modifications, and reasons for modifications.	Journal provides quite a bit of detail about planning, construction, testing, modifications, and reasons for modifications.	Journal provides very little detail about several aspects of the planning, construction, and testing process.
Function	Cooler keeps ice cubes solid for _____ minutes.	Cooler keeps ice cubes solid for _____ minutes.	Cooler keeps ice cubes solid for _____ minutes.	Cooler keeps cubes solid for _____ minutes.