



The Effect of Salt on the Boiling Temperature of Water

INITIAL OBSERVATION

Cooking instructions tell you to add salt to water before boiling it.

PROJECT TITLE

Boiling Temperature with Salt

PURPOSE OF THE PROJECT

To find out how table salt affects the boiling temperature of water.

HYPOTHESIS

Adding table salt to boiling water will cause the water to boil at a higher temperature.

MATERIALS AND EQUIPMENT

- Table Salt
- Distilled Water
- 2 Quart Cooking Pot
- Pint measuring cup
- Teaspoon and tablespoon measuring spoons
- Thermometer
- Stirring spoon

EXPERIMENTAL PROCEDURE

1. Boil one quart of distilled water on a stove.
2. Measure the temperature of the boiling water. Record the highest temperature reading. This is the control to compare with.

3. Measure out table salt using a kitchen measuring spoon. Level the spoonful.
4. Add the measured salt to the boiling water and stir.
5. Measure the temperature of the boiling water with the salt in it. Record the highest temperature reading.
6. Repeat for other amounts of salt.

DATA

Data Obtained: 2/25/95, Mankato, MN	
Amount of boiling water	2 Cups
Temperature of boiling water (control)	212.9° F
Amount of table salt added to boiling water: Run #1	1 Tbl.
Temperature of boiling water after adding salt: Run #1	215.6° F
Additional amount of table salt added to boiling water: Run #2	1 Tbl.
Temperature of boiling water after adding salt: Run #2	218.3° F

EXPERIMENTAL OBSERVATIONS

When the salt was added to boiling water it bubbled up more, and then stopped boiling. Shortly afterwards, it boiled again.

If the thermometer extends beyond the outside of the pot it reads a higher temperature. Heat from the stove burner makes the thermometer read higher. Keep the thermometer over the pot when making temperature measurements.

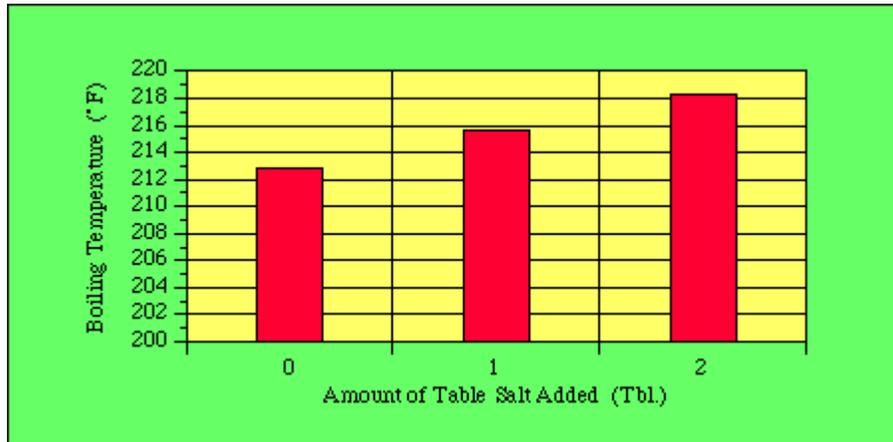
CALCULATIONS

- Total amount of table salt added for Run #1: $0 + 1 = 1$ Tbl.
- Total amount of table salt added for Run #2: $1 + 1 = 2$ Tbl.

RESULTS

Temperature of boiling water (Control)	212.9° F
Amount of table salt added to boiling water: Run #1	1 Tbl.
Temperature of boiling water after adding salt: Run #1	215.6° F
Total amount of table salt added to boiling water: Run #2	2 Tbl.
Temperature of boiling water after adding salt: Run #2	218.3° F

Amount of Table Salt Added Versus Water Boiling Temperature



RELATED QUESTIONS

- Why do you think cooking instructions tell you to add salt when boiling water? When the water is hotter, you can cook food faster. Salt also makes the food taste better.

CONCLUSIONS

- Is the hypothesis correct?
Yes. Adding table salt to water causes the water to boil at a higher temperature.
- Problems with doing the experiments.
The temperature readings were hard to make. Gloves had to be worn to keep my hands from getting too hot. Had to be careful that the stove heat was not hitting the thermometer.
- Other things learned.
Be careful when adding salt to boiling water. It makes the water boil vigorously for a second or two.