

Information required to be able to determine the Heat Flow Rate (HFR) into a cooking vessel under field conditions:

1. Observation of the duration of various levels of cooking power such as “high”, “medium”, “low” et cetera is made in the home. The question to answer is, “What is the duration and intensity of each cooking power level? This is normally recorded as a sequence of cooking steps with attendant fire power observations.
2. Share with the cook the type of observations that are going to be made, and the interruptions to the cooking process they may expect.
3. Record how many liters of water are placed in pots, if any, during preparation of the meal. Prepare substantially identical pot(s) and fill them to at least 50% of their capacity. Mount the thermocouple appropriately so as to measure the temperature of the water.
4. High Power HFR Test
  - a. Observe cooking behaviour and when the fire seems to be at maximum power that will be used during the session, ask the cook if this is so. If yes, remove the cook’s vessel. Place a second cooking vessel substantially identical to the one the cook is using, of a known mass and material, containing a known mass of water and a thermocouple connected to a measuring device, on the stove.
  - b. Leave the pot on the stove while the fire continues to burn at the same high power. After approximately one minute take note of the initial water temperature and the time.
  - c. After an additional 2 minutes, note the final temperature and time, and replace the original pot so the cooking may continue.
  - d. Record the pot mass, material and water mass used, the initial and final temperature, the dimensions of the cooking vessel and any relevant information needed to obtain a similar product.
5. Low Power HFR Test
  - a. Observe cooking behaviour and when the fire seems to be at minimum power that will be used during the session, ask the cook if this is so. If yes, remove the cook’s vessel. Place a second cooking vessel substantially identical to the one the cook is using, of a known mass and material, containing a known mass of water and a thermocouple connected to a measuring device, on the stove.
  - b. Leave the pot on the stove while the fire continues to burn at the same high power. After approximately one minute take note of the initial water temperature and the time.
  - c. After an additional 2 minutes, note the final temperature and time, and replace the original pot so the cooking may continue.
  - d. Record the pot mass, material and water mass used, the initial and final temperature, the dimensions of the cooking vessel and any relevant information needed to obtain a similar product.
6. Additional Power Levels
  - a. Repeat the HFR Test as often as necessary in order provide valuable information that may be used to characterise various steps in the cooking sequence.

Equipment needed:

- A thermocouple connected to a measuring device for determining the water temperature in the cooking vessel
- A ruler or tape measure for measuring the dimensions of the cooking vessel
- A scale of 30 kg capacity with 1 gram resolution for measuring the masses of the cooking vessels and water loads
- A stopwatch