

## **Instrument Procedure: Void Space**

### **Description**

The void space is the space between fuel pieces.

### **Procedure**

To test the indirect void space, complete the following steps.

1. Fully fill biomass into a 5.5 L standard bucket without any press or compression.
2. Slowly pour measured amount of water that is poured into the bucket without spill.
3. Record the volume of poured water and repeat the above steps four more times.
4. Average the five results and then divided by the bucket volume (5.5 L). The percentage result from this calculation roughly represents the percentage of void space of biomass.
5. Test the void space of biomass with the same method.
  - The bulk density of biomass is much smaller than woodchips while its void space is larger. Thus, one prediction from this data is that biomass burned much faster and stronger than biomass under the same condition.
  - In order to avoid the increasing temperatures out of control when gasifying pure biomass, gasify a mix of 50% biomass (by weight) before gasifying pure biomass. This mix will be referred as 50/50 mix in this research.