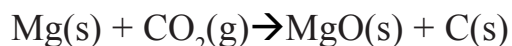


H.M.S. Beagle

Experiment #040605-05

“Burning Magnesium in CO₂”

Magnesium metal, Mg, is capable of burning in carbon dioxide, CO₂, similar to the way it would in pure oxygen, O₂, but with a difference. The chemical reaction is shown below:



Follow these steps to burn magnesium metal turnings in CO₂ using dry ice as the CO₂ source:

1. Perform this demonstration outside.
 2. Place an aluminum tray in the ground with several folded newspapers under it to act as insulation.
 3. Crush up about 5 pounds of dry ice (a typical slab purchased from a grocery store is about 5 lbs) into a powder. Use a towel wrapped around the slab of dry ice and crush it with a hammer. Be sure to use gloves when handling the dry ice!
 4. Place about two-thirds of the crushed dry ice into the aluminum pan and form it into a mound with a small indentation on the top in the middle.
 5. Place 24 grams of magnesium metal turnings into the indentation while making sure that there is 1-2” of crushed dry ice below the indentation in which the Mg has been placed.
 6. Using a propane torch light the center of the pile of Mg turnings. It can take up to 30 seconds to get the Mg turnings to ignite, The Mg will not burn well at this point, but as long as there is some combustion this is good enough.
 7. Turn off the torch and quickly dump the remaining crushed dry ice on top of the burning Mg turnings and step back. The Mg should start burning brilliantly. Make sure all spectators are standing back at least 10 feet! There will be lots of MgO “smoke” and some stray sparks of burning Mg will pop out of the mound of dry ice. After about 1 minute the reaction will stop.
 8. After the reaction has stopped and cooled off for about a minute, peel back the layer of dry ice and MgO with a knife or spatula. The reduced carbon will be visible. The carbon and any remaining magnesium oxide can be examined in the laboratory.
- The remains of the reaction can be dumped into any suitable outside, metal trash container.