Reaction of Mg and CO_2

Recommended for Chapter(s): 3

Demo #012

Materials NOT in box

1. This demo requires substantial prep to get the dry ice blocks ready. Therefore, please e-mail Darby (feldwinn@chem.ucsb.edu) 2 days before you want to perform the demo so that the blocks will be ready.
2. Blow torch (next to demo box).
3. Blue gloves (general cabinet).
4. Safety goggles.

Procedure

1. (Prep) Get block of dry ice with holes in it from Darby.
2. (Prep) Measure out ~5 g of Mg.
3. Align dry ice block so that vent holes are pointing away from students (you might need to put a paper towel under the dry ice block so that it stays in place).
4. Pour Mg in cavity.
5. Use blow torch to light Mg.
    a. Light blow torch by turning yellow knob to on and then pressing in on yellow knob.
    b. Flame can be adjusted using the black knob.
6. Once the Mg lights (you see very bright light) place other block of dry ice on top of Mg so that the holes in the dry ice line up.

Safety

1. Wear safety goggles.
2. Instruct students to not look directly at the burning Mg.
3. This demo produces a large amount of smoke and should not be done in small rooms or poorly ventilated rooms.

Clean Up

1. Return the materials to the cart in the demonstration library room.

Stockroom Notes

2. The solid waste can be thrown in the trash.
3. Refill the single use bottle of Mg to the appropriate level (~5 g).
4. If needed refill any materials that have been used up.
5. Return items to demonstration tub.
6. Return tub to the demonstration library.
    a. Return the goggles to the goggle box.
    b. Return the blue gloves to the general cabinet.
    c. The blow torch sits next to the demonstration tube.

Discussion

The reaction that is occurring is

$Mg(s) + CO_2(s) \rightarrow C(s) + MgO(s)$

The black residue left over after the reaction is complete is carbon and the white residue is the MgO.

The most common type of fire extinguishers dispense CO_2. Due to the above reaction CO_2 fire extinguishers should never be used to put out Mg fires.

For more information on this demo go to:

http://www.ilpi.com/genchem/demo/co2mg/index.html

Materials in box

1. Mg turnings with bottle for measuring
2. Vial with carbon and MgO from after reaction is completed
3. Blow torch
4. Spatula
5. Extra Mg Fisher AC19108-5000