

INTEGRATING EARTH SCIENCE**● Magnesium: From Sea Water to Fireworks**

In 1997, about 110,000,000 kg of magnesium was produced in the United States. Most of this magnesium was extracted from sea water. In fact, there is enough magnesium dissolved in the Earth's oceans to supply all of our magnesium needs for the next 1,000 years. What do we use magnesium for?

One-third lighter than aluminum and four times as light as iron, magnesium is the lightest metal that is widely used in engineering. Magnesium is not very strong, but it can be combined in alloys with other metals, such as aluminum and zinc, to make a stronger material without adding much weight. These alloys are used in many products that need to be light and strong, including airplanes, race cars, boats, auto parts, and portable tools.

Magnesium Burns Brightly

In addition to its light weight, another useful property of magnesium is its ability to react with oxygen, resulting in a very hot, white flame when magnesium is burned. Because of the brightness of this chemical reaction, magnesium is often used in the production of fireworks, flashlights, and flares.

Your Turn to Think

1. Why are magnesium alloys often used in making airplanes, race cars, and boats?
2. Why is it important for a race car or a boat to be light in weight?
3. Explain why magnesium is often used to make fireworks and flashlights.
4. Suppose you are designing a car and need to choose a metal for the engine case. Give two reasons why a magnesium alloy is a much better choice than magnesium.