



## BICYCLE MINERALS

Bicycles are used as a form of transportation, for fun and exercise, and even in professions like messenger delivery and sports. Bicycles are made with materials that come from mining.

**Think About It:** Have you ever wondered what materials are needed to make a bicycle and how we get these materials? Where are these materials found?

## Minerals in Your Everyday Life



### Directions for Activity:

The table on this page lists many of the mineral resources needed to make a bicycle, the percentage of the mineral resource imported by the United States and major sources. Add how each mineral resource is used in making a bicycle to this table. Then answer the questions on the back.

**Mineral Resources Needed to Make a Bicycle**

Mineral Resource	Net % Imported by U.S.	Major Sources	% U.S. Self-Sufficiency (Subtract % Imported from 100%)	Used In
BAUXITE AND ALUMINA	100	Australia, China, Brazil, Indonesia		
GRAPHITE (natural)	100	China, India, Brazil, North Korea		
IODINE	88	Chile, Japan, China, Azerbaijan, Russia		
IRON ORE	0	China, Australia, Brazil, India		
MAGNESIUM (metal)	31	China, Russia, Israel, United States	69	Example: Frame
MOLYBDENUM	0	China, United States, Chile, Peru		
QUARTZ (industrial sand)	0	United States, Italy, Germany, Australia		
SALT	19	China, United States, Germany, India		
SCANDIUM	100	China, Russia, Ukraine, Kazakhstan		
SULFUR	19	China, United States, Russia, Canada		
TITANIUM (sponge metal)	64	China, Japan, Russia, Kazakhstan		
ZINC	72	China, Australia, Peru, United States		



**FUN FACTS:**

- ♦ More than 100 million bicycles are made worldwide each year.
- ♦ The fastest recorded bicycle speed on a flat surface is 83 miles per hour (133 km/h).
- ♦ The Guinness World Record for the longest rideable bicycle is 28.1 m (92 ft 2 in.) in length.



1. Can a bicycle manufacturer in the United States build a bike without having to use any mineral resources imported from another country? Why or why not?

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2. What is the fewest number of countries needed to get the mineral resources to make a bicycle? List the countries.

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3. List the mineral resources used to make a bicycle from lowest percent to highest percent imported by the United States.

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4. List some other uses you know for any of the mineral resources in a bike.

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5. Which of the mineral resources in bicycles do you think may also be obtained through recycling?

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**Extension Activity**

Some bikes are made with titanium or scandium-aluminum alloyed metals. Some bikes are made with a steel alloyed frame. Titanium, scandium and aluminum are all less than half the density of steel (density is the weight of a material for a given volume). What advantage might be gained with the less dense materials and why?

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Go to the MEC website to read more about the mineral resources used to make different styles and qualities of bikes in the article *Bicycle Frames...What's the Difference?* Published by the USGS.

For information on more of the mineral resources used to make bicycles, go to [http://www.conservation.ca.gov/cgs/information/kids\\_geozone/Pages/answers.aspx](http://www.conservation.ca.gov/cgs/information/kids_geozone/Pages/answers.aspx).

[www.MineralsEducationCoalition.org](http://www.MineralsEducationCoalition.org)

