

Identifying Minerals

Between 4500 - 5000 minerals have been identified

- About 40 are abundant in Earth's crust and make up most rocks

- called "rock forming" minerals

____ - Physical properties of minerals are used to identify them

1. Color - helps to identify the mineral
- few are identified by Color alone

REASON: A. the same mineral can have different Colors
- impurities change the Color of the mineral

example:

B. many minerals have the same Color

2. Luster - the way a mineral reflects light
- the "shine" of a mineral

Two groups of luster.....

A. **Metallic** - shines like metal
-polished....or
-unpolished (dull metallic)

B. **Nonmetallic** - 5 types

1. Glassy - looks like glass

2. Pearly - different colors appear when light reflects at different angles
- this is called iridescence
3. Silky - looks like its made of small fibers
- has a “silky” or satin shine
4. Greasy - looks like Grease was rubbed on the mineral
5. Dull - has no shine

Q: What causes different lusters?

A:

example:

Smooth surface

vs.

Rough surface

-Difficult to identify minerals by luster alone...

REASON:

- A. a mineral can have more than one luster
- B. many minerals have the same luster

3. Streak - color of mineral powder

- produced by rubbing mineral across an unglazed piece of porcelain (streak plate)
- rarely varies
- streak may not be the same color as the mineral
- the mineral hematite has a red-brown streak
- metals have a **dark colored streak**
- nonmetals have a **light colored streak**

- 4. Hardness**
- the resistance to being scratched.
 - determined by the strength of atomic bonds
 - Diamond - hardest known substance
 - it will scratch all other substances
 - strongest atomic bonds
 - Talc - softest mineral
 - all others will scratch talc
 - weakest atomic bonds

Friedrich Mohs - made a hardness scale based on 10 minerals

MOHS SCALE OF HARDNESS

- | | |
|-------------|-------------|
| 1. Talc | 6. Feldspar |
| 2. Gypsum | 7. Quartz |
| 3. Calcite | 8. Topaz |
| 4. Fluorite | 9. Corundum |
| 5. Apatite | 10. Diamond |

Common tools to determine hardness.....

<u>Material</u>	<u>Hardness</u>
<i>fingernail</i>	2.5
copper penny	3.0
glass slide	5.5
steel file	6.5

5. **Specific Gravity**- each mineral has a definite specific gravity

-**nonmetals**.....low sp.g..... \approx 2.0 - 3.5

-**metals**.....high sp.g..... \approx 4.0 and up

6. **Crystal shape** - minerals have a definite crystal shape
- helpful if it can be **found**
- difficult to observe in most samples

7. **Cleavage** - tendency to split along smooth **flat** surfaces
- minerals **break** along the crystal planes
- minerals have one, two or three cleavage surfaces
- difficult to identify

8. **Fracture** - **breaking** of mineral
- may be **irregular** breaks causing **uneven** surfaces

- conchoidal fracture (shell-like fracture)