Identifying Minerals

Minerals can be identified based on their physical properties. The main properties used to identify minerals are described below.

- **Colour** – comment on colour of mineral (can be unreliable, as some minerals will display more than one colour).
- **Lustre** – shininess of mineral’s surface (described as metallic, dull, earthy).
- **Crystal Shape** – minerals usually grow in a regular crystal lattice. As minerals get bigger, the shape becomes more evident.
- **Streak** – colour of powdered mineral, tested by scraping the mineral on a streak plate.
- **Hardness** – in comparison to minerals as listed on Moh’s hardness scale.

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

- **Magnetic** – will be attracted to magnet.
- **Specific Gravity** - ratio of the density of a material when compared to the density of water.

Use the Mineral Properties Factsheet and the physical properties of the unknown samples to help you identify the ten common ore minerals.
<table>
<thead>
<tr>
<th>Mineral</th>
<th>Property</th>
<th>Hardness</th>
<th>Relative Density</th>
<th>Lustre</th>
<th>Streak</th>
<th>Other Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chalcopyrite</td>
<td>Mass - usually</td>
<td>3.5 - 4</td>
<td>3.83 - 4</td>
<td>Metallic</td>
<td>Black to grey</td>
<td>Crystals may be massive, botryoidal or stalactitic or stalagmitic, or massive - no crystals usually.</td>
</tr>
<tr>
<td>Galena</td>
<td>Mass - usually</td>
<td>4.0</td>
<td>4.1</td>
<td>Metallic</td>
<td>Black</td>
<td>Crystals usually massive. Crystals may be massive, botryoidal or stalactitic or stalagmite.</td>
</tr>
<tr>
<td>Haematite</td>
<td>Mass - usually</td>
<td>5.5 - 6.5</td>
<td>6.5 - 7.5</td>
<td>Metallic</td>
<td>Black</td>
<td>Crystals usually massive. Crystals may be massive, botryoidal or stalactitic or stalagmite.</td>
</tr>
<tr>
<td>Magnetite</td>
<td>Mass - usually</td>
<td>6.5 - 7.5</td>
<td>7.5 - 8.5</td>
<td>Metallic</td>
<td>Black</td>
<td>Crystals usually massive. Crystals may be massive, botryoidal or stalactitic or stalagmite.</td>
</tr>
<tr>
<td>Pyrite</td>
<td>Mass - usually</td>
<td>6.5</td>
<td>7.5 - 8.5</td>
<td>Metallic</td>
<td>Black</td>
<td>Crystals usually massive. Crystals may be massive, botryoidal or stalactitic or stalagmite.</td>
</tr>
<tr>
<td>Sphalerite</td>
<td>Mass - usually</td>
<td>3.5 - 4</td>
<td>3.5 - 4</td>
<td>Resinous</td>
<td>Red - Brown to Yellow to Grey</td>
<td>Crystals may be massive, botryoidal or stalactitic or stalagmite.</td>
</tr>
<tr>
<td>Malachite</td>
<td>Mass - usually</td>
<td>3.5 - 4</td>
<td>3.5 - 4</td>
<td>Resinous</td>
<td>Red - Brown to Yellow to Grey</td>
<td>Crystals may be massive, botryoidal or stalactitic or stalagmite.</td>
</tr>
<tr>
<td>Azurite</td>
<td>Mass - usually</td>
<td>2.5 - 3.2</td>
<td>3.2 - 3.5</td>
<td>Dull</td>
<td>Dark Grey to Yellow</td>
<td>Crystals may be massive, botryoidal or stalactitic or stalagmite.</td>
</tr>
</tbody>
</table>

**Specific Gravity**
- Chalcopyrite: 4.1 - 4.3
- Galena: 5.5 - 6.5
- Haematite: 6.5 - 7.5
- Magnetite: 7.5 - 8.5
- Pyrite: 9.5 - 10.5
- Sphalerite: 3.5 - 4
- Malachite: 3.5 - 4
- Azurite: 2.5 - 3.2

**Mineral**
- Chalcopyrite
- Galena
- Haematite
- Magnetite
- Pyrite
- Sphalerite
- Malachite
- Azurite
- Bauxite

**Cystal Form**
- Cubic
- Cubic
- Cubic
- Cubic
- Cubic
- Cubic
- Cubic
- Cubic

**Crystal Shape**
- Tabular to thick crystals
- Tabular to thick crystals
- Tabular to thick crystals
- Tabular to thick crystals
- Tabular to thick crystals
- Tabular to thick crystals
- Tabular to thick crystals
- Tabular to thick crystals