

Rutile

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Institute for IAS Examination

Rutile



Rutile Latest News

When a team at IIT-Delhi recently compared the members of a family of minerals called rutile oxides, they found a significant difference between metals and insulators that a well-known mathematical model could not explain.

About Rutile

- It is a **mineral** composed primarily of **titanium dioxide, TiO_2** .
- It is the **most common and stable form of titanium dioxide** found in nature.
- It is **one of the three main minerals of titanium**, along with **ilmenite and leucoxene**.
- It forms **red to reddish brown, hard, brilliant metallic, slender crystals**, often completely surrounded by other minerals.
- Natural Rutile can **contain up to 10% iron** and large amounts of niobium and tantalum.
- Rutile was first described in 1803 by Abraham Gottlob Werner.

Rutile Occurrence

- It is found in **igneous, metamorphic, and sedimentary rocks** throughout the world.
- Rutile has a **high specific gravity** and is **often concentrated by stream and wave action in “heavy mineral sands”** that exist today in both onshore and offshore deposits.
- Much of the world’s rutile production is **mined from these sands**.
- Rutile ore is largely available in countries like **Australia, India, South Africa, Ukraine, and Sierra Leone**.
- **India** has significant rutile deposits in the **coastal sands of states such as Kerala, Tamil Nadu, Odisha, and Andhra Pradesh**.

Rutile Uses

- Rutile has several important industrial applications due to its **high refractive index** and **strong resistance to heat and chemical corrosion**.
- One of its main uses is **as a pigment in paints, plastics, ceramics**, and other materials. It **imparts a bright white color and excellent opacity** to these products.
- Rutile has **minor uses in porcelain and glass manufacture** and in making some steels and copper alloys.
- Rutile is also used as a **source of titanium metal**, which has a **wide range of applications** in industries such as **aerospace, automotive, electronics, and medical devices**.
- In addition to its industrial uses, rutile is **valued as a collector’s mineral** and **gemstone**.
 - Transparent rutile crystals are sometimes cut and polished for use as gemstones.

News: **TH**

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