

# Industrial Minerals

Republic Of The Sudan  
Ministry of Minerals



Geological Research  
Authority of the Sudan  
(GRAS)

## Introduction:

Industrial minerals and rocks have diverse characteristics in terms of their nature, origin, and abundance as well as their industrial application, and economic value. There are metallic minerals such as bauxite, chromite, limonite, which are classified as industrial minerals frequently used in the industry as fusion-resistant materials. Industrial minerals and rocks are found in and derived from all igneous, metamorphic and sedimentary rocks.

### Marble:

Marble occurrences are widespread in the Sudan. It is found in many area such as NayferErRugayig (White Nile State), West Berber-Atbara (River Nile State), Derudeib, Maman and MarsaArkuiyai (Red Sea State), Rashad (Southern Kordufan State) and EsSemeih (North Kordufan State). Also there are huge deposits of marble in Gedarif,

Kassala and Darfur States.

The uses of Marble in the Sudan include:-

- Chemical and cement industries
- Decorative stones.



### Gypsum

Gypsum deposits occur along the Red Sea coast, 50km north of Port Sudan at BirEit, Sagoum mount and Topanum. Detailed studies have assured existence of gypsum in large quantities. A gypsum is used in cement industries, as plaster for construction plates and in chemical industries.

### Kaolin:

Kaolin is one of the most important clay minerals which is found as sedimentary cover rocks in most parts of Sudan. Detailed studies were carried out in some locations in Khartoum and River Nile states. Kaolin deposits are characterized by excellent standards for utilization in ceramic industry in Sudan. The deposits of Kaolin in Sudan is mostly associated with the Late Cretaceous Nubian sandstone -mudstone Formation.



### Chromite:

Chromite ore occurs in a many locations in Sudan such as Ingessana Hills, Nuba Mountains, Red Sea Hills and GalaAlnahal, Gedarif State. Chromite used in steel and chemical industries. Ingessana Hills chromite are estimated at one million tons of high quality ore. There is a national company works in mining, beneficiation and export of chromite.



**Mica:**

Muscovite Mica is used in many industries like electronics, heat isolation and paints. It is used also in deep drilling oil wells. Muscovite mica occurs in economic reserves at Rahaba Hills in El Sheraik area, River Nile State. Minor occurrences are found in QalaAnahal area, Gedarif State.

**Talc:**

Two types of important talc deposits are found in the ultra-basic rocks in Ingessana Hills and QalaEnahal region. Minor occurrences are found in a number of regions in northwest Sudan. The second type is associated with dolomite rocks in Sheraik region and a number of locations in the Red Sea Hills. Talc is utilized locally for paints and pharmaceutical industries.

**Feldspar:**

Alkali feldspar is found in abundance in the Bayuda Desert, River Nile State. Substantial amounts of Alkali feldspar residual soil has been discovered in Sabaloka, 80km north of Khartoum with potassium oxide concentrations reach 14%. Sabaloka feldspar Confirm ore can be used for porcelains and glass industries.

**Bentonite:**

Bentonite is available at Umm Ali area (~150km north of Khartoum in the River Nile State). There are two types of Bentonite in the area:

- Gray clay on surface and up to 34 meters depth.
- Black clay at 4 meters depth.

Laboratory test shows that both clay types can be used as drilling mud after treatment.

**Trona:**

Trona deposits occur in western oasis particularly in Natronoasis in North Darfur state. The deposits are huge and renewable. Trona precipitated as a result of evaporation of hypersaline Na-rich waters.



**Graphite:**

Graphite is found in the eastern South Kordufan, Blue Nile, River Nile, Northern and Western Darfur states. It is used in local foundries. The reserves need to be evaluated.

**Magnesite:**

Magnesite is found in ultrabasic rocks in Ingessana Mountains, Blue Nile State, QalaAnahal in Gedarif State and in many areas in the Red Sea State. The deposits are under evaluation.

**Phosphatic Rocks:**

There are two types of phosphatic rocks identified in Sudan:

- The sedimentary type is mainly found as high  $P_2O_5$  concentrations within the Late Cretaceous Nubian sandstones of WadiHalfa and Abu Hasheem in the Northern State.
- The hydrothermally altered type has been

discovered in eastern Nuba Mountains, South Kordufan State. It occurs as sheared quartzite rocks rich in U-Phosphates in eastern Nuba Mountains.

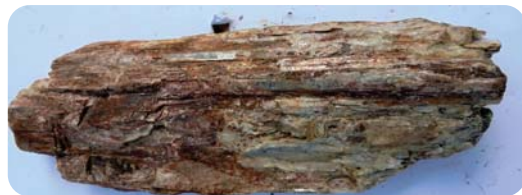
**White Sand:**

Huge white silica sand deposits are found in two locations:

- Al Matama area, River Nile State.
- Bara area, Northern Kordufan State.

**Tourmaline:**

Tourmaline is the main source of Boran (B). The main occurrences are found in El Sheraik pegmatite, River Nile State and in Soderi-Umm Badir areas, North Kordufan State.

**Kyanite:**

Kyanite occurrences are reported in several locations in Sudan such as the Red Sea, Blue Nile, Bayouda desert the River Nile states. Jebel Gerain Kyanite in the River Nile State is the only evaluated occurrences 30 m tons).

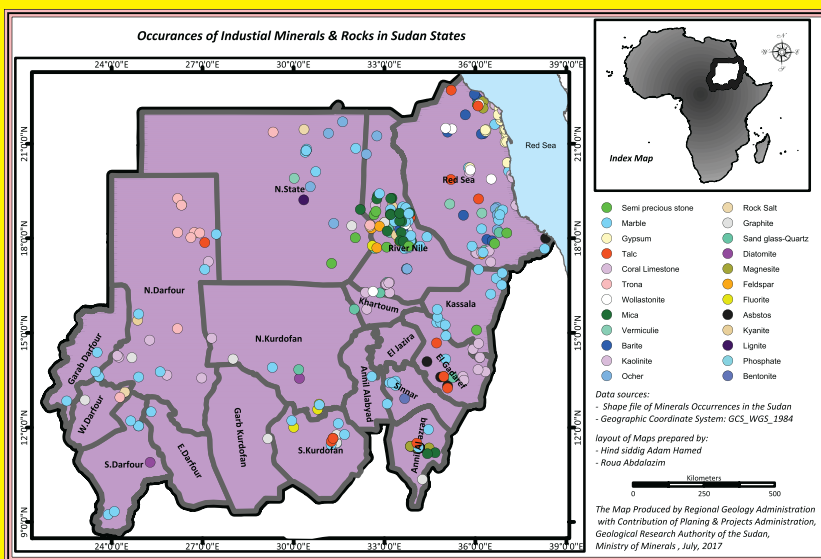
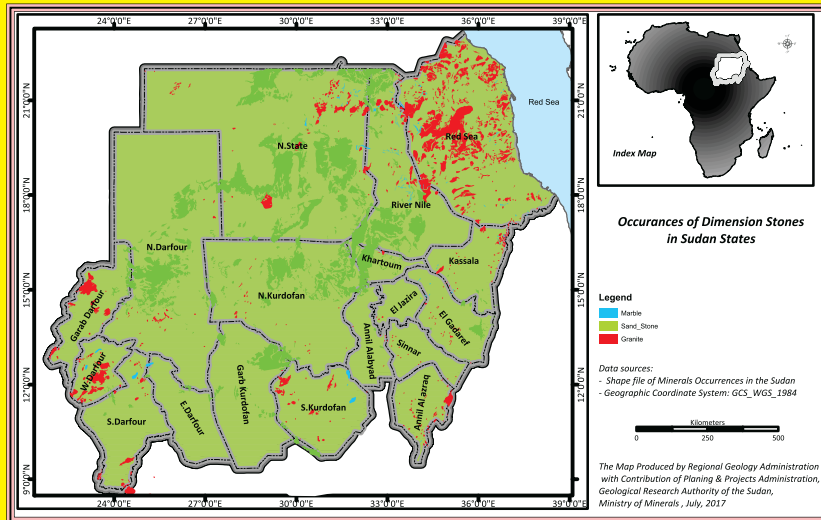
**Pozzalana:**

Pozzalana deposits (volcanic ash) are found in many areas in Sudan; Bayuda Desert, River Nile State, and Jebel Merra Mountain in North Darfur states. Studies show that Pozzalana can be used in many industries such as low strength cement, bricks, concrete aggregates and for road paving and other civil applications.



**Potassium Nitrate:**

Depositions of Potassium and Sodium Nitrates are found associating the Late Cretaceous Nubian sandstone in the area of Umm Kaddada, North Darfur State. Studies confirm that these rocks were deposited in continental Lacustrine environments. The percentage of potassium oxide  $K_2O$  ranges between 30% and 65%.



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