

## Sennar Marble Deposit, Loc. 7

Beds of marble interbedded with gneiss strike at NNE in Sennar area. They have been quarried north of the railway line at the Segata–Meshata area. The lime produced was used in the construction of Sennar Dam. CaO content is about 54% on average, South of the railway line the marble has been quarried at Umm Alog about 2km Southwest of the J. Dud railway station and also at 1.5km SSE of the station. This marble contains about 52.4% CaO and 0.2% MgO.

## Southern Blue Nile Marble Deposits, Loc. 8

The marble deposits extend between Er Roseries and the Ingessana Hills in the forms of discontinuous bands. They are steeply dipping, strike NE and have various colors. At Er Roseries the marble is quarried at Abu Ramad.

It contains about 48.7% CaO. On the western bar: about 3.2km south of Abu Ramad, the marble crops about some 400m from the river where it is quarried at Sas; it contains about 56% CaO. At the Ingessana Hills area the ranges of the assay are about 50.4–53.2%. CaO, 0.5–1.4% MgO and just under 1% SiO<sub>2</sub>. In some localities the assay reveal quite pure marble at about 56%CaO.

## Kordufan

### a) El Senmeih

A marble deposit that lies 25k south of El Semeih railway station in close proximity to El Semeih Gardud road, has been investigated by RAS. Samples analyzed gave the following averages: 40–55% CaO, 0.04–17% MgO, 0.29–2.43% Fe<sub>2</sub>O<sub>3</sub>, 0.5–.14.7% SiO<sub>2</sub>, 32.25–46.8% LOI. Reserves have yet to be calculated.

## b) Abbassiya

Huge marble deposits forming SW trending high ridges extending for several kilometers occur 24km SE of Abbassiya village.

Samples collected from the area revealed the predominance of marble of good quality for cement production over these of objectionable qualities. The results indicated the following range of values 45–50% CaO, 0.2% MnO, 3.8% MgO 0.28–1.9% Fe<sub>2</sub>O<sub>3</sub>, 0.15–8.3% SiO<sub>2</sub>, 0.1–1.89% Al<sub>2</sub>O<sub>3</sub>, 38.4–45% LOI. The total averages of the marble at Abbasiya amount to about 182 million tons.

### Central Butana Marble Deposit:

Flat marble bands of more than 2km in length with an average width of about 200m are located in Es Subagh–Reira areas of Central Butana. Reserves calculated to depth of 50 m amounted to 50 million tons marble suitable for Portland cement manufacture. Analytic results gave the following average values:

53.3% CaO, 2.4% MgO, 1.85% SiO<sub>2</sub>, 41.7% LOI.

In conclusion, all areas being mentioned, emphasis has been placed a marble Suitable for cement industry. However, in all these area decorative marble various colors occur. In this respect three areas worth special mentioning for their line quality decorative stone. These are namely: Sinkat [Summit], W. Atbara and J. Sur-og in Butana area.



Republic of Sudan  
Ministry of Minerals  
Geological Research Authority of the Sudan  
(GRAS)



# MARBLE

*in the* Sudan

P.O. Box: 410, Khartoum – Sudan  
Tel: +249 (1) 83 777939, 83 775005 • Fax: +249 (1) 83 776681  
e-mails: gras@minerals.gov.sd • gras@sudanmail.net

[www.minerals.gov.sd](http://www.minerals.gov.sd)

## Marble occurrences in Sudan

Marble occurrences are widespread in the Sudan. The most suitable ones for lime, chemical and cement industries include Nayfer Er Rugayig (White Nile State), West Barber–Atbara (River Nile State), Derudeib, Manian and Marsa Arkuyai (Red Sea State), Rashad (Southern Kordufan State) and Es Semeih (Northern Kordufan State). Decorative marble occurrences are also of widespread nature.

### Nayfer Er Rugayig Area, Loc. 1:

This area is located in the eastern corner of the Jebelein topographic sheet, about 8–12km east of the White Nile River and is connected to Rabak–Kosti by a motorable track. The investigations on this marble deposit started in 1963. Soon after that the Nile Cement Company was established. Estimates earned out in 1992 indicated reserves of about 12 million tons of minerable and possible reserves.

The Er Rugayig marble occurs as massive highly jointed hands ranging in color from snow–white to dark–grey. Miner logically. They are composed mainly of calcite with minor tremolite and quartz. The Nile Cement Company, which operates the Rabak Cement Factory in the area, produces about 70,000 tons clinker a year with pipeline for exporting the production.

### West Barber–Atbara, Loc. 2

The area can be divided into two main series: Abu Harrik (high–grad gneisses) and Kurmut (low–grade volcano–sedimentary) series overlain by Nubian Sandstone Formation. Ternary volcanic and superficial sediments respectively.

The Abu Hurrik area has been investigated for the purpose of exterminating

the extent of the marble band: and their suitability for cement industry. Three deposits have been located, namely Abu Harrik and Abu Khosus.

Abu Hurrik 12.5km west of the Nile River near the Abu Harraz berbery ferry. The marble bands strike NNE SSW and extent for about 4.4km and with a width ranging between 70 to 200m. The average values of chemical analysis gave 48.62% CaO, 1.58% MgO, minor percentages of SiO<sub>2</sub>, MnO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub>. These results suggest that Abu Harrik marble is suitable for cement industry.

In Abu Harraz area, the marble bands extend for 8.4km and strike NNE–SSW with a width of about 40m. The chemical analysis of the marble samples show average values of 40.05% CaO, 10.17% MgO, 0.033% Fe<sub>2</sub>O<sub>3</sub> and 41.73% LOI on the basis of its high MgO contents, this marble might be suitable for the production of low quality cement.

The Abu Khosus area is about 14km west of the Nile. The marble bands are nearly vertical. They extend for about 16km NNE–SSW direction. The marble varies between 100 to 240m in width, some chemical analysis gave the following average: 53.66% CaO, 3.07% Fe<sub>2</sub>O<sub>3</sub>. And 41.37% LOI these results show that this marble for cement industry. Depending on predetermined blending proportions the marble in these three occurrences can be used for producing high quality cement.

Clays, as necessary ingredients for a cement manufacture are founded at Kadabas area close to the Nile. The average values of chemical analysis of samples taken from these clays gave 6.07% CaO, 2.07% MgO,



54.15% SiO<sub>2</sub>, 7.89% Al<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub> and 11.18% LOI which is suitable for cement industry. The amount of clays, covering about 7km and 120–170m deep, is sufficient for such industry.

## The Red Sea Hills

### a) Derudeib–Maman Area, Loc. 3

Several marble deposits are found in the Red Sea Hills Area. Some of them are used for decorative stone production, while others have been found suitable for cement industry. One of the latter is about 20km east of Derudeib railway station. It occurs as beds within the Nefiredeib Series. Three such bodies total about 4.5km long with thickness varying from about 130 to 370m. Analysis of the samples gave average values of 53.5% CaO with less than 3% MgO. Based on drilling results, the reserves were estimated at just over 30 million tons, with high prospects for extending drilling downdip beyond the present 50m level.

### b) Marsa Arkuyai Limestone, Loc. 4

The area concerned is part of the coralline limestone reef banking the Red Sea shore that lies about 70km north of Port Sudan. The area studied in detail is 16km long and ranging in width between 500m and up to 1.5km, analysis carried out indicated a lime content of over 40% in more than 80% of the samples tested. The average chemical composition computed from 72 samples gave the following figures: 47.7% CaO, 3.2% MgO, 3.9% SiO<sub>2</sub>, 0.5% Fe<sub>2</sub>O<sub>3</sub>, and 41.6% LOI. Reserves calculations made down to an average depth of 16 m in areas of good quality limestone for the production of Portland cement totaled 55.6 million metric tons. A deposit of suitable clay with estimated probable reserves amounting to 17 million metric tons found about 17km away from the area.