

MONTHLY BULLETIN

February 1958

*Mineral
Industries Laboratory*

**1430 Devine Street
Columbia, South Carolina**

**DIVISION OF GEOLOGY
State Development Board**

**DEPARTMENT OF GEOLOGY
University of South Carolina**

HIGH-SILICA SAND DEPOSITS NEAR
NICHOLS, SOUTH CAROLINA

By

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High-silica sand deposits occur as low, elongate ridges that trend south-southwest parallel to the Lumber and Little Pee Dee Rivers near Nichols, South Carolina. The sand ridges, apparently flood plain deposits, are on the southeast bank of the stream. They range from 100 to 800 feet in width and are many times as long as they are wide. They stand 5 feet or so above the level of the surrounding swamp. Shallow drill holes and excavations indicate that the ridges are composed typically of clean, white quartz sand to depths of about 5 feet. Below the white sand lies a heavily stained brown sand, which has a high percentage of organic material. The water table is at a depth of about 5 feet on the sand ridges.

Locher Silica Corporation is currently mining a sand deposit on the east bank of the Lumber River about 1.5 miles east-northeast of the town of Nichols. The sand is dug with front-end loaders; then it is washed, screened, dried, and bulk-loaded into railway cars. The quartz is clean, colorless, and free from stains or inclusions. A few thin streaks of dark minerals occur in the deposit, but most of these dark grains are in the fine-

grainec fraction and are removed in the simple washing and screening process. As ordinarily produced the sand contains about 99.5 percent SiO_2 and 0.025 to 0.035 percent Fe_2O_3 . A sand of higher purity could be produced by exercising greater care in the removal of the small amount of heavy mineral grains. This deposit has for many years supplied sand to the Laurens Glass Works, Laurens, South Carolina, at the rate of 400 or more tons per week.

In the 8 mile belt that extends from the Locher Silica Corporation operation south-southwest to S. C. Highway 917 at Sandy Bluff Bridge the sand deposits are estimated to contain a total of about 2,000,000 tons of clean, white sand. This sand contains typically about 97.94 percent SiO_2 and 0.11 percent Fe_2O_3 . By washing, screening, and removing the small amount of dark iron-bearing minerals, this sand can be upgraded to a product containing 99.70 percent SiO_2 and 0.005 percent Fe_2O_3 .

Deposits similar to the one being worked near Nichols are present intermittently along the Little Pee Dee River almost to the point where it joins the Pee Dee River. Screen and chemical analyses of two samples from this area are given by Buie (in preparation) as follows:

Screen Analyses (Percentage on Screens)

		28	35	48	65	100	200	-200
No.	192	13.8	28.0	36.4	17.0	4.1	0.6	0.1
No.	193	17.4	31.0	32.2	15.1	3.7	0.5	0.1

Chemical Analyses (Percentages)

	Unbeneficiated		Beneficiated	
	192	193	192	193
SiO ₂	94.75	97.94	99.73	99.70
Al ₂ O ₃	0.13	0.27	0.15	0.12
Fe ₂ O ₃	0.16	0.11	0.009	0.005
TiO ₂	0.17	0.18	0.030	0.010
K ₂ O				
Na ₂ O	0.21	0.22		
CaO	0.33	0.35		
MgO	0.09	0.37		
Moisture	<u>4.25</u>	_____	_____	_____
	100.09	99.44	99.919	99.835

Sample 192 is from the south edge of a borrow pit immediately north of U. S. Route 378 at a point 11 miles due west of Conway and 0.4 miles east of the bridge over the Little Pee Dee River. The thickness of the sand here and south of the road is about 6 feet.

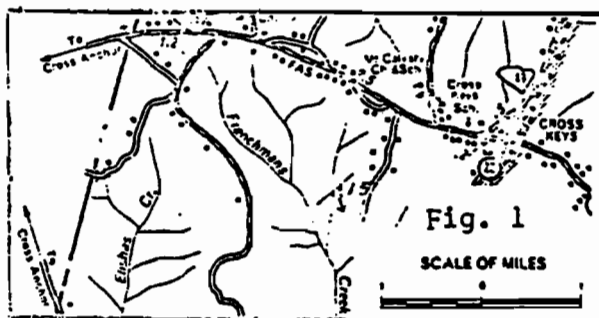
Sample 193 is from small sand pits 0.2 miles north S. C. Highway 917 at a point 1.5 miles east of Sandy Bluff Bridge over the Little Pee Dee River. The white sand here extends to a depth of 6 to 7 feet.

References Cited

Buie, B. F., in preparation, Silica for glass manufacture in South Carolina: S. C. State Development Board, Division of Geology, Bull. 23.

MARBLE IN UNION COUNTY, SOUTH CAROLINA

Marble crops out in a single, isolated exposure in Union County, South Carolina. This occurrence is on the Wilburn property near Cross Keys. It was quarried in the past for building and monumental stone, but the operation has been long abandoned. The site may be reached as follows: An unimproved road leaves State Route 49 about 1.1 miles west of Cross Keys. Follow this road south for 0.45 miles, and then bear right on a primitive road that is not shown on the map. Travel 0.5 miles; then go through woods 1100 feet on an azimuth of $S 65^{\circ} W$. A tributary of Frenchmans Creek is encountered here. Travel south along the eastern bank of the creek, and the abandoned quarry will be encountered in about 400 feet. See Figure 1.



The excavation is about 50 feet wide and extends about 50 feet into the hill side. Slump has largely obscured the workings.

The section dips gently to the southeast. At the base is a porphyroblastic biotite gneiss, which has a strike of $N 55^{\circ} E$ and a dip of $15^{\circ} SE$. Streaking of the biotite has a strike of $S 25^{\circ} E$. A layer of calc-silicate granulite

separates the gneiss from the overlying marble. This granulite is composed largely of diopside and actinolite. The following quotation is from Sloan (1908, p. 233), who had access to diamond drill cores. He states that "two seams of white crystalline coarse grained dolomitic marble, respectively five feet and two feet thick, are exposed at this point, separated by three feet of ... slate." Both layers of marble crop out at the present time, but the material in between is not exposed. Calc-silicate minerals become abundant toward the top of the marble. Loose fragments on the hill side above the quarry indicate that a calc-silicate granulite overlies the marble.

The rock at this locality is a white dolomite marble that has an average grain size of 2 to 3 mm. Much of the material appears in hand specimen to be composed entirely of carbonate. Further, there is hardly any effervescence with HCl, which indicates a high dolomite content. The analysis is as follows:

CaO	39.18
MgO	14.74
CO ₂	44.40
Silica and insoluble	<u>1.13</u>
	99.45

The high magnesium content of the material at this locality confines its use to that of a soil conditioner for agricultural purposes or for monumental stone. The deposit is too small, however, to compete with similar deposits elsewhere in the State or the Southeast. There is therefore apparently no market

for material from this locality at the present time.

The position of this marble in the regional geology is obscure. It is apparently not on strike with that in the Laurens County belt or with that in the Gaffney belt. Therefore no correlation is suggested at the present time.

References Cited

Sloan, Earle, 1908, Catalogue of the mineral localities of South Carolina; S. C. Geol. Survey, ser. IV, Bull. 2. Reissued 1958, Div. of Geol., State Development Board.

PUBLICATION ANNOUNCEMENT

The Division of Geology, State Development Board, has reissued the Catalogue of Mineral Localities of South Carolina by Earle Sloan.

This book was published in 1908. Although it is 50 years old, it contains a wealth of information on mineral deposits of South Carolina. It contains 500 pages and is descriptive for the most part. There is a small geologic map and several illustrations and diagrams. The price is \$2.75. This volume will be of great value to all persons interested in the geology and mineral industries of South Carolina. It is now available at the Division of Geology in the Wade Hampton Building, Columbia, or at the Mineral Industries Laboratory

EXPLORATION ORGANIZATION FOUNDED IN
SOUTH CAROLINA

by

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On December 1, 1957, Southern Explorations, Incorporated, was founded in Rock Hill, South Carolina. The organization consists of seven stockholders with \$5,000 subscribed stock. William R. Ferrell of Rock Hill is president and Joel W. Ashley of Lancaster is vice president of the corporation. L. H. McMurray holds the office of secretary and treasurer. Other stockholders are W. H. Schrader and J. W. Lesslie, Jr., of Rock Hill, and R. M. Baillesford of Garnet, South Carolina. Attorney W. D. Hayes is legal consultant and H. M. Armstrong, formerly with the United States Radium Corporation, is consulting engineer.

Activities of the organization include prospecting, mining, and milling in the two Carolinas. There is also speculation in buying, selling, and leasing of property that shows extensive mineral deposits.

Exploration was started in a North Carolina area which had been under observation four years prior to the birth of the corporation. Ashley and Ferrell have been working in this area for the past two years. Their findings are said to be very encouraging and show good possibilities.