

Florida's INDUSTRIAL MINERALS

Making Modern Life Possible



Since pre-historic times man has utilized the natural materials from the earth for constructing shelters, tools, utensils, and weapons. The earliest mining in Florida was carried out by Native Americans, who quarried the mineral chert from limestone for use in points and tools. Alluvial clay deposits were also utilized for pots and other cooking utensils. Today minerals from the earth are the building blocks of our modern society. Florida ranks among the top ten states in the nation in industrial mineral production. Florida's minerals are utilized both locally and worldwide.



A central Florida phosphate mine.

FLORIDA'S MINERAL COMMODITIES

Phosphate - Florida supplies approximately one-quarter of the world's phosphate needs and three-quarters of US domestic needs. Nearly all of the rock that is mined in Florida is used to manufacture fertilizer which, in turn, is used for agricultural purposes. What is not used in the manufacture of fertilizer is typically used in a number of products including feed supplements, vitamins, soft drinks, and toothpaste.

Stone - Florida typically ranks in the top five states nationally in both production and consumption of crushed stone (limestone and dolostone). Most of the stone that is mined in Florida is used for road construction. Limestone of high purity can undergo calcination (heating) and, together with other ingredients, be used to manufacture portland and masonry cement. Florida ranks in the top five states in production and consumption of portland cement and is first in the production and consumption of masonry cement.

Crude Oil and Natural Gas is produced from two primary oil field areas of Florida. Production began in 1943 in south Florida near Fort Myers, where the Cretaceous Sunniland Formation yields oil from depths between 11,000 and 13,000 feet. In north-western Florida, near Jay, oil has been produced since 1970 from the Jurassic Smackover Formation at depths between 14,000 and 17,000 feet. Production peaked in the late 1970s at 48 million barrels of crude oil and 52 billion cubic feet of natural gas per year.

Heavy Minerals - are mineral grains with specific gravities generally in excess of 2.9. These include ilmenite, rutile, zircon, and leucoxene. Ilmenite and rutile are primary ingredients in the manufacture of titanium dioxide pigments, used in the manufacture of paint, varnish and lacquers, plastics, and paper. Florida is the top heavy mineral producer in the nation.

Peat - an organic-rich accumulation of decaying plant material. Although peat departs from the inorganic definition of a mineral, it is generally considered an economic mineral. Florida ranks in the top five states nationally in the production of horticultural peat.

Clay - Fuller's earth, common clay, and kaolin are mined in a few locations in Florida. Fuller's earth is typically used as an absorbent material, while kaolin is used in the manufacture of paper and refractories. Common clay, mined in small quantities from various locations throughout the state, is used in the manufacture of brick, cement and lightweight aggregate.

MINE LOCATIONS IN FLORIDA

Mining occurs throughout Florida. Mines are typically situated in areas where the commodity is shallow enough to economically extract. The local geology therefore plays a fundamental role in mine location. This map illustrates the distribution of recent mines in Florida. The colored dots represent different mineral commodities. Each dot may represent more than one mine.

- Clay
- Fuller's Earth
- Fill
- Heavy Minerals
- Stone
- Peat
- Sand
- Shell
- Phosphate Mine Areas
- Oil Fields

Map derived from FDEP, Bureau of Mine Reclamation data.

0 Miles 50

Fuller's earth was discovered near Quincy, Gadsden County, in 1893. Originally used by Fullers to remove oil from wool, its later usefulness in processing mineral oils made fuller's earth an important industrial commodity. Mining continues in the region today. Modern uses of fuller's earth include oil-absorptive products and cat litter.

Heavy mineral sand

Heavy mineral mining began in 1916 near Mineral City (now Ponte Vedra Beach) to supply ilmenite for WWI titanium tetrachloride production. In the mid-1920s, zircon and rutile were also produced in this area. Other beach deposits near Jacksonville, Melbourne, and Vero Beach were worked through the WWII years. Today production is limited to inland mines in northeastern Florida and along the Trail Ridge.

In the 1500's, Spanish settlers and soldiers quarried coquina limestone near St. Augustine to form building blocks for their forts and homes.

Limestone has been used in Florida as a building material and source of lime and cement since Spanish times. High-purity limestone has been quarried near Ocala, Marion County, since the turn of the century. Limestone is still an important industry in Florida, supplying raw materials for cement and roadbase.

Early phosphate dredge near Dunnellon, Florida.

Pebble phosphate was discovered in the late 1880's in central Florida near Ft. Meade, Polk County. Its discovery eventually led to the demise of the hardrock deposit mining. Today the region is known as the Central Florida Phosphate District. Several companies operate mines in the district.

Horse head pump drawing oil from Florida's first discovery well, the Humble Sunniland No. 1, in 1943.



Hard rock phosphate



Ocala Limestone

Pebble phosphate

In recent years fertilizer exports from Florida have exceeded a billion dollars in value, making it another one of Florida's leading export commodities.

Sand and Gravel - Florida ranks in the top one-third of states in the country in sand and gravel used or produced. Sand and gravel is subdivided into construction and industrial sand, the bulk of which is, in Florida, construction grade.

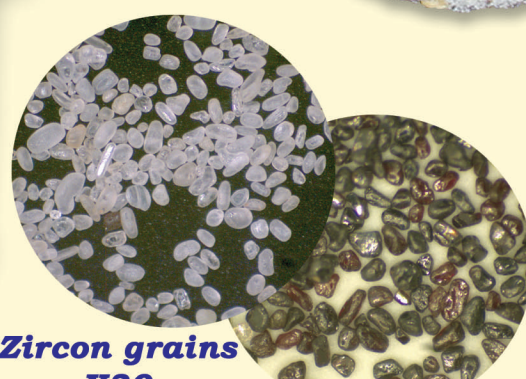


Sand

Gravel

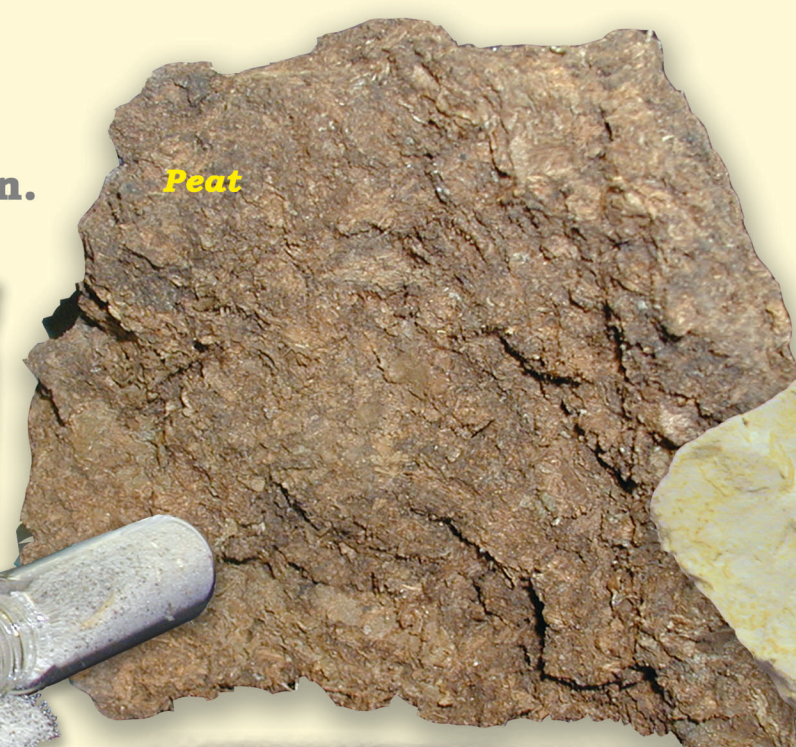


Heavy Minerals

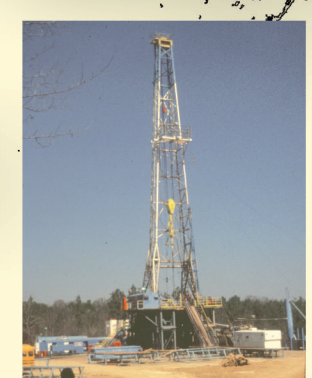


Zircon grains X30

Rutile grains X30



Peat



Florida oil rig



Jay field crude oil



Fuller's earth

Kaolin

Common Clay

Fuller's earth mine near Quincy, Gadsden County



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