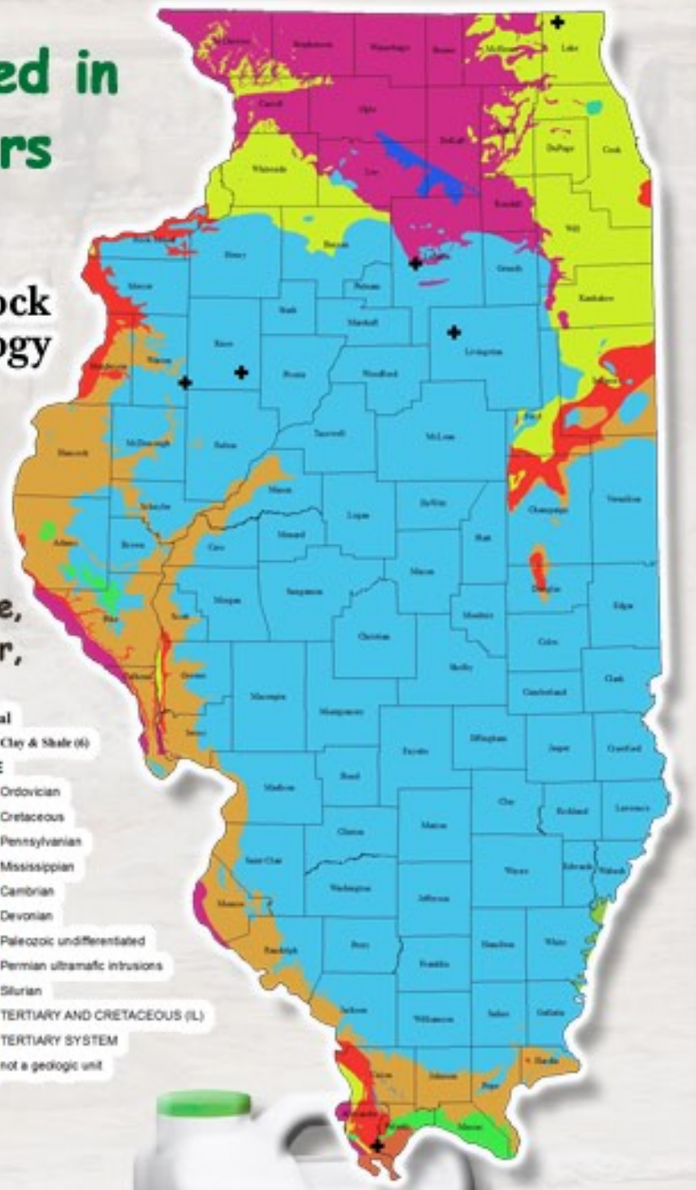
ILLINOIS' mining... Clay and Shale

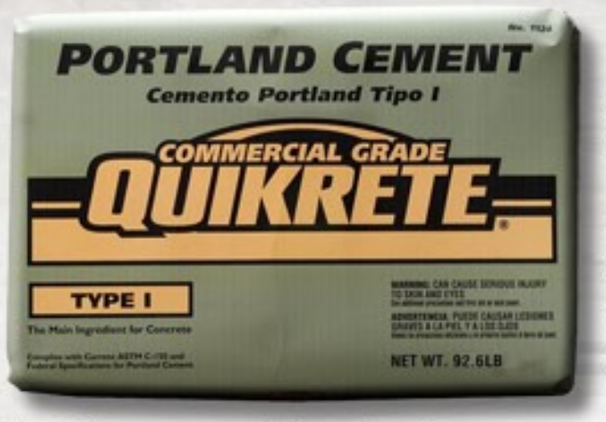
Clay minerals have been mined in Illinois for thousands of years and documented in half of the Illinois counties.



Materials

Native Americans in Illinois once used upland soils and river-bottom sediments for ceramics, creating both ceremonial and utilitarian items to cook and store food.

The primary clay minerals important to the industrial development of Illinois include illite, kaolinite, chlorite, vermiculite, and montmorillonite. Clay materials are either used directly, as in Native American-carved claystone artifacts, pet litter, engineering fill, and impermeable barriers to water and waste migration, or they are fired (vitrified) into ceramic products and into flux for cement manufacture. Clay and shale, (the sedimentary rock made of clay minerals), are used to manufacture bricks, ceramic tiles, and light-weight aggregate, an essential element for large building structures.



Clay and shale are also important ingredients in the production of Portland Cement, the key binding agent used in concrete.

The mica-like clay mineral illite was named for the state of Illinois. In Illinois, it is the most abundant clay mineral in surficial and bedrock strata and in the shales used for ceramics. Absorbent clays or fuller's earth, found in southern Illinois, absorbs both oil- or water-based liquids, which makes these clays ideal for use as oil absorbent sweep-up compounds and as pet litter. Absorbent clays are also expandable, making them excellent thickeners and valuable for applications where low permeability is needed, such as in waste barriers and landfill liners. Absorbent clays are explained in depth in a separate poster.

European settlers used a similarly wide range of materials to create pottery, paving and building bricks, field drain tiles, and structural blocks and tile for buildings. Ceramic field drain tiles were an early innovation that made possible cultivation of much of Illinois' seasonally wet soils. Clay pipes were commonly used for sewer drainage. Refractory (fire brick) is used to line high temperature furnaces.

Although brick and tile manufacturing was once an important part of Illinois' industrial mineral economy, competition from other markets has diminished its importance in today's state economy. The number of ceramic plants in Illinois dropped from almost 700 at the end of the 19th century to three at the end of the 20th century due to technological improvements and competition.

Illinois Department of Natural Resources

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