Laterite Encyclopedia Article

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Contents

Laterite Encyclopedia Article.....1

Contents.....2

Laterite.....3

Laterite

Laterite is a type of **soil** produced by intense, prolonged weathering, usually in tropical climates. Abundant **oxygen**, **water**, and warmth leach most water-soluble **minerals** from particles of parent **rock** and leave a nonsoluble residue enriched in hydroxides of **aluminum**, **iron**, magnesium, nickel, and titanium. Laterites high in specific **metals** are often stripmined as ores.

Laterite rich in aluminum are termed aluminous laterite or bauxite. Aluminous laterite is formed from **clay** minerals such as kaolinite ($Al_4[Si_4O_{10}][OH]_8$) by the **leaching** of silica (SiO_2). The residue left by the leaching of silica, aluminum hydroxide ($Al[OH]_3$), is termed gibbsite. Gibbsite's dehydrated forms, diaspore and bohemite (both $HAlO_2$), are also common components of aluminous laterite. Aluminous laterite is the world's primary source of aluminum.

Laterite descended from **basalt** is rich in iron and nickel and is termed ferruginous laterite. Laterite formed from rocks particularly rich in nickel may contain a high percentage of the mineral garnierite ($[NiMg]_6Si_4O_{10}[OH]_8$). A continuum of mixed laterites exists between the aluminous and ferruginous extremes. Nickeliferous laterites are an important commercial source of nickel.

See Also

Soil and Soil Horizons; Weathering and Weathering Series