The first of the so-called "rare-earths" to be discovered, ytterbium takes its name from the Swedish village Ytterby (also the source of the names for terbium, erbium and yttrium). Discovery is credited to de Marignac in 1878. Initial identification was tediously made from the same mixture that most chemists of the time worked from: oxides of the lanthanides which gave rise to the term "rare-earth" due to its powdery consistency and often brownish color. But with the chemical separation techniques available at the time, it was very difficult to distinguish these similar elements. Even ytterbium itself turned out to hide another element. Lutetium was separated from it in 1907.

Pure ytterbium is like most of the lanthanides: silvery and ductile, reacting slowly with air to form an oxide. Mostly obtained from monazite sand, ytterbium makes up about 0.03% of that mixture.

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