ABSTRACT

The invention provides thick high-toughness high-strength steel plates having excellent strength and toughness in the central area through the plate thickness, and methods for manufacturing such steel plates.

The thick steel plate has a specific chemical composition and includes a microstructure having, throughout an entire region in the plate thickness direction, an average prior austenite grain size of not more than 50 μm and a martensite and/or bainite phase area fraction of not less than 80%. A continuously cast slab having the specific chemical composition is heated to 1200°C to 1350°C, hot worked with a strain rate of not more than 3/s and a cumulative working reduction of not less than 15%, and thereafter hot rolled and heat treated.