

ABSTRACT

HIGH TOUGHNESS AND HIGH TENSILE STRENGTH THICK STEEL PLATE WITH EXCELLENT MATERIAL HOMOGENEITY AND 5 PRODUCTION METHOD FOR SAME

A high tensile strength thick steel plate with excellent material
homogeneity and excellent strength, elongation, and toughness in a
mid-thickness part is provided by heating a continuously-cast slab adjusted to
10 a specific chemical composition to at least 1200 °C and no higher than 1350
°C, hot forging the continuously-cast slab under conditions of a temperature
1000 °C or higher, a strain rate of 3/s or less, and a cumulative working
reduction of 15 % or more using opposing dies having respective short sides
differing such that when a short side length of a die having a shorter one of
15 the short sides is taken to be 1, a short side length of a die having a longer one
of the short sides is 1.1 to 3.0, allowing cooling to obtain a steel raw material,
reheating the steel raw material to at least the Ac_3 temperature and no higher
than 1250 °C, performing hot rolling of the steel raw material including at
least two passes carried out with a rolling reduction of 4 % or more per pass,
20 allowing cooling to obtain a thick steel plate, reheating the thick steel plate to
at least the Ac_3 temperature and no higher than 1050 °C, rapidly cooling the
thick steel plate to 350 °C or lower, and tempering the thick steel plate at at
least 550 °C and no higher than 700 °C.

25 (FIG. 2)