CLAIMS

1. A steel plate comprising a chemical composition containing, in mass%,

C: 0.080 % or more and 0.200 % or less,

Si: 0.03 % or more and 0.40 % or less,

Mn: 0.50 % or more and 5.00 % or less,

P: 0.015 % or less,

S: 0.0050 % or less,

Cr: 0.10 % or more and 3.00 % or less,

Ni: 5.00 % or less,

Al: 0.030 % or more ~~add~~ and 0.080 % or less,

N: 0.0070 % or less, and

B: 0.0003 % or more and 0.0030 % or less in a range satisfying the following formula (1),

$$[C] + [Mn]/6 + [Ni]/15 + [Cr]/5 \geq 0.57 \quad (1)$$

where [] indicates a content of an element in the [] in mass%,

the balance being Fe and inevitable impurities, wherein

the steel plate has a thickness of 100mm or more

a surface layer of the steel plate has a microstructure where an area fraction of bainite is 10 % or more, and

an inside portion of the steel plate, which is inside the surface layer, has a yield stress of 620 MPa or more.

2. The steel plate according to claim 1, wherein

the chemical composition further contains, in mass%, at least one selected from the group consisting of

Cu: 0.50 % or less,

Mo: 1.50 % or less,

Nb: 0.100 % or less,

V: 0.200 % or less, and

Ti: 0.005 % or more and 0.020 % or less in a range satisfying the following formula (2) rather than the formula (1),

$$[C] + [Mn]/6 + ([Cu] + [Ni])/15 + ([Cr] + [Mo] +$$

[V])/5 ≥ 0.57 (2)

where [] indicates a content of an element in the [] in mass%.

3. The steel plate according to claim 1 or 2, wherein

the chemical composition further contains, in mass%, at least one selected from the group consisting of

Mg: 0.0005 % or more and 0.0100 % or less,

Ta: 0.010 % or more and 0.200 % or less,

Zr: 0.0050 % or more and 0.1000 % or less,

Y: 0.001 % or more and 0.010 % or less,

Ca: 0.0005 % or more and 0.0050 % or less, and

Rare Earth Elements: 0.0005 % or more and 0.0200 % or less.

4. A method of producing a steel plate, comprising

preparing a steel material having a chemical composition containing, in mass%,

C: 0.080 % or more and 0.200 % or less,

Si: 0.03 % or more 0.40 % or less,

Mn: 0.50 % or more and 5.00 % or less,

P: 0.015 % or less,

S: 0.0050 % or less,

Cr: 0.10 % or more and 3.00 % or less,

Ni: 5.00 % or less,

Al: 0.030 % ~~more~~ or more and 0.080 % or less,

N: 0.0070 % or less, and

B: 0.0003 % or more and 0.0030 % or less in a range satisfying the following formula (1),

[C] + [Mn]/6 + [Ni]/15 + [Cr]/5 ≥ 0.57 (1)

where [] indicates a content of an element in the [] in mass%,

the balance being Fe and inevitable impurities,

subjecting the steel material to hot rolling to obtain a hot rolled steel plate having a thickness of 100mm or more,