CLAIMS

1. High-Mn steel comprising:

a chemical composition containing, in mass%,

C: 0.30 % or more and 0.90 % or less,

Si: 0.05 % or more and 1.0 % or less,

Mn: 15 % or more and 30 % or less,

P: 0.030 % or less,

S: 0.0070 % or less,

Al: 0.01 % or more and 0.07 % or less,

Cr: 0.5 % or more and 7.0 % or less,

N: 0.0050 % or more and 0.0500 % or less, and

O: 0.0050 % or less,

Ti: less than 0.005 %, and

Nb: less than 0.005 %, with the balance being Fe and inevitable impurities;

a microstructure containing austenite as a matrix phase and nonmetallic inclusions with an area fraction of less than 5.0 %; and

a yield stress of 400 MPa or more and an absorbed energy (vE_{-196}) of 100 J or more.

2. The high-Mn steel according to claim 1, wherein the chemical composition further contains, in mass %, at least one selected from

Cu: 0.01 % or more and 1.00 % or less,

Ni: 0.01 % or more and 1.00 % or less,

Mo: 2.0 % or less,

V: 2.0 % or less,

W: 2.0 % or less,

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

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

REM: 0.0010 % or more and 0.0200 % or less.

3. A production method of high-Mn steel, a microstructure containing austeninte as a matrix phase and non-metallic inclusions with an area

fraction of less than 5.0 %; and

a yield stress of 400 MPa or more and an absorbed energy (vE_{-196}) of 100 J or more microstructure containing austenite as a matrix phase and nonmetallic inclusions with an area fraction of less than 5.0 %; and

a yield stress of 400 MPa or more and an absorbed energy (vE_{-196}) of 100 J or more, comprising:

heating a steel material having the chemical composition according to claim 1 or 2 to a temperature range of 1100 °C or more and 1300 °C or less;

hot rolling the steel material with a rolling finish temperature of 800 °C or more and less than 950 °C to obtain a hot-rolled steel plate; and

then subjecting the hot-rolled steel plate to cooling treatment at an average cooling rate of 1.0 °C/s or more from a temperature at or above (the rolling finish temperature - 100 °C) to a temperature range of 300 °C or more and 650 °C or less.

4. The production method of high-Mn steel according to claim 3 comprising:

after the cooling treatment, heating the steel plate to a temperature range of 300 °C or more and 650 °C or less, and then cooling the steel plate.